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"Scire est nescire, nisi id me
Scire alius sciret."

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THE SECONDARY INFECTIONS OF PULMONARY TUBERCULOSIS AND THEIR TREATMENT BY VACCINES.[1]

BY

S. H. HABERSHON, M.D. Cantab., F.R.C.P.,

Physician to the Brompton Hospital for Consumption and Diseases of the Chest.

CERTAIN constitutional types are, there is little doubt, peculiarly liable to contract tuberculosis. This susceptibility is usually spoken of as an inherited characteristic. But whether the individual is prone to such a tendency or whether he has a greater resisting power, tuberculous infection may be contracted in both classes and yet the disease itself remain latent.

There is ample evidence to prove that either a latent form of disease or an active and progressive tuberculosis render the individual also susceptible to invasion of other infective

[1] Introduction to a discussion at a meeting of the Bristol Medico-Chirurgical Society on May 13th, 1914.

organisms, and more especially to those of the catarrhal type.

The old-fashioned popular impression that pulmonary tuberculosis was often due to a " neglected cold " is in reality the expression of these facts now more scientifically explained. In the histories of our tuberculous patients we find the onset usually attributed to influenza (so called), or to some catarrhal affection, pneumonia, bronchitis, pleurisy or " feverish cold." In some cases, no doubt, the uncomplicated tuberculous invasion is ushered in by an attack simulating a febrile catarrh, but more often it is the catarrhal attack that awakes into activity a latent tuberculosis.

And if this is true of the onset of symptoms of pulmonary tuberculosis when the malady has previously been latent, it is still more true of the progressive disease. Activity is often enhanced and exaggerated by the prevalence of catarrhal affections due to the invasions of secondary organisms. Whether by the inflammatory action induced, or by the lowering of the vitality of the patient, these keep up the activity of the process and aggravate the symptoms.

It has always seemed to me that too little attention has been paid to the secondary complications of pulmonary tuberculosis, and that many of the more acute symptoms are not infrequently attributed to the tuberculous invasion when in reality they are due to the secondary infection. Not only may the symptoms of the pulmonary tuberculosis be masked by the secondary infection causing catarrhs of various kinds, but even the character of the catarrhal disease itself may be modified by the presence of tubercle. A special instance in point is seen in pneumonic tuberculosis.

The patient is seized with an attack simulating ordinary lobar pneumonia, though the severe constitutional symptoms (rigors and vomiting, etc.) are absent. No definite crisis occurs, but the temperature is kept up and assumes a hectic

type, perhaps for weeks or months after the onset, while other unusual symptoms, such as late hæmoptysis, may supervene.

In most cases it is found that, in addition to the tubercle bacillus, Fraenkel's pneumococcus is also present.

The tuberculosis is masked by the pneumonia, and the character of the pneumonic attack is modified by the presence of the tubercle bacillus. I venture to give three instances of different character illustrating the methods in which *secondary infections* are often *the cause of an awakening of activity of a latent tuberculosis*, or at least of a tuberculosis not especially active.

Case A.—E. S., aged 45, a stonemason's foreman, was taken ill with all the signs of acute pneumonia. His family history was bad, and previous to the attack he had suffered from a rather persistent cough and loss of weight with malaise and debility. I was called into consultation because the pneumonic attack followed a rather unusual course, and at the end of a fortnight presented no crisis and developed a hectic type of temperature. A day or two previous to my visit there was a sharp attack of hæmoptysis. After several examinations of sputum T.B. were found, and in all a diplococcus pneumoniæ was present. The patient was eventually treated with Marmorek's serum, and after two months completely recovered, while the physical signs of consolidation of the right upper lobe entirely disappeared. The patient lost all cough and expectoration, and gained considerably in weight, while all T.B. disappeared from the sputum. He was perfectly well some five years after the attack, and I have lost sight of him since.

Case B.—A previous resident at the Brompton Hospital inoculated his finger with tubercle when engaged in pathological work. The result was a small nodule on one of the fingers below the nail (about the size of a small pea). This produced an intractable sore, and was excised by the surgeon to the Hospital. A microscopic examination proved the nodule to be tuberculous, with giant cells in the midst of granulation tissue. Six months later there was an epidemic of influenza in the Hospital, and the resident in question was taken ill with febrile disturbance, "the sensation of chills," headache and a definite bronchial catarrh. On the second or third day of the attack he observed some streaks of blood in the sputum, and a bacteriological examination of a small pellet of mucus proved it to be teeming with tubercle bacilli. Signs of disease at one apex developed.

The patient left the hospital and went to a sanatorium, returning in a year completely well. He has never had any trouble since and it is now some twelve to fifteen years ago.

Case C was of a different type. A young man of 19 with a desperate family history. The father and one sister were alive and well, but the mother died early from pulmonary tuberculosis, and some five brothers had all died between the ages of 18 and 25 from acute pulmonary tuberculosis. I was called to see the patient with an acute attack of catarrh, and found a bronchial attack with abundant crepitant sounds at the base of the lower lobe of the left lung. The temperature was raised, there were cough and expectoration, but no tubercle bacilli. In a few weeks the signs cleared up, and the young man on recovery was sent to an army coach in a healthy suburb of London contrary to my advice. I was again called to see him some three months later with a severe attack of hæmoptysis. Signs of disease were present at the apex of the left upper lobe, and he died six months later of acute pulmonary tuberculosis. This case occurred nearly twenty years ago.

I cite these three cases as instances of a secondary infection producing an exacerbation or an awakening into activity of a tuberculosis that in all probability was latent in each case.

I do not leave out of account a large number of cases of pulmonary tuberculosis that are uncomplicated and commence insidiously with cough, expectoration, night sweats and gradual development of symptoms due to infiltration of one or both apices, nor do I speak of cases that are also uncomplicated by secondary catarrhs and that commence with acute gastric or dyspeptic symptoms, or of further cases that may be ushered in by an attack of hæmoptysis, and this is the first warning of the onset of pulmonary tuberculosis.

None of the above examples of secondary infections at the onset need special vaccine treatment, and they are not the class of cases included in the scope of the present paper.

But when the lungs are invaded with tuberculous disease one of two processes occurs. In an individual with good resisting power the disease becomes quiescent and fibrous, and contraction and resolution occur. Or the disease may,

in other cases, proceed to active and progressive extension. In both classes of cases there is a tendency to an invasion of the lungs by secondary infections and organisms.

The presence of other infective organisms than the tubercle bacillus in the sputum is no proof that the patient is suffering from a toxæmia due to any of these. Under normal conditions a variety of pathogenic bacteria are present in the mouth, and it is common to find the presence of staphylococci, pneumococci and streptococci in the mouths and nasal passages of healthy individuals.

Residence in a sanatorium often causes the disappearance of pathogenic organisms from the sputum, but in some cases they persist and are even capable of virulent infection of other individuals.

An excellent piece of work has been done on the subject of secondary infections by Dr. A. C. Inman,[1] the director of the Bacteriological Laboratories of the Brompton Hospital. As he states, "all exposed ulcerated surfaces are especially prone to secondary contamination with pathogenic organisms," and "ulcers of the lungs can therefore not be expected to escape pollution," and indeed the walls of tuberculous cavities have been shown (as he states) by Koch in 1884 to contain secondary bacteria.

We are therefore met with the following facts :—

The conditions of onset of pulmonary tuberculosis are frequently complicated by signs and symptoms demonstrating the simultaneous invasion of a secondary infective organism; in most of the cases of acute and chronic pulmonary tuberculosis in which sputum is present we find abundant evidence of the presence of one or more pathogenic organisms; in many of the cases of pulmonary tuberculosis with febrile disturbance and the presence of such bacteria in

[1] "A Contribution to the Study of Secondary Infections in Pulmonary Tuberculosis, *Lancet*, 1912, I. 975.

the sputum, we have to determine whether the signs and symptoms are due to the primary tuberculous disease or to the secondary pathogenic organisms, or to both, and on the other hand it is necessary to discover whether the patients are merely the carriers of such virulent organisms in the same manner in which individuals may be typhoid or diphtheria carriers, and not themselves sufferers from any form of toxæmia other than that derived from the tubercle bacillus.

Now the first mistake that is made in deciding what cases are suitable for vaccine treatment is one that I have myself made. In all my earlier cases I have concluded that if a pathogenic organism was found in abundance in the sputum, in addition to the tubercle bacillus, this was an adequate reason for the preparation of a vaccine and for treatment by its hypodermic injection. Even in some of the cases that I show and describe to-night I am not sure that I have not failed through want of more careful and thorough investigation.

How then can we determine whether the signs and symptoms of a tuberculous patient are due to the toxæmia of the tuberculous virus alone, or to that of a secondary pathogenic organism, or to both? For it is obvious that if the offending secondary organisms which are present in the sputum are not producing any toxæmia or symptoms, it is useless to prepare and inject a vaccine, and this is in fact what is often done, to the discredit of vaccine treatment.

I must candidly confess that though I feel I am now in a position to recommend the best and most favourable course to adopt, it is only in a few cases that I have learnt to follow this plan. Several methods of determination present themselves which guide us.

(*a*) *The physical signs.*

(*b*) *The symptoms*, including the character of sputum.

(*c*) *The bacteriological examination* of sputum.

(*d*) *The opsonic index* of the blood to tubercle and to each pathogenic organism.

I propose to deal with each of these methods as briefly as possible.

(*a*) *Physical signs.*—The prevalence of signs of catarrh—general rhonchus and sibilus, or, in addition to signs of consolidation at one or both apices, the presence of bronchitic râles, and above all of numerous basic crepitations. Occasionally signs of induration of lung or of pleural thickening at one or both bases may be present.

(*b*) *Symptoms.*—These have an intimate connection with physical signs. If the patient is not ill, and presents a condition of general well-being without much febrile disturbance, and yet there are universal crepitations or a large area of lung is affected with catarrhal signs, we may fairly conclude that these do not all represent softening tubercle. We are not wrong in attributing these moist sounds, if abundant, to a bronchitic condition.

If the temperature is raised and the case febrile, it becomes more difficult to assign the proper share to the tuberculous and the catarrhal infection. In such case we must investigate further.

The sputum of a case of tuberculosis of lungs in its softening stage is usually purulent and nummulated, and elastic tissue is often observed in cases of destructive ulceration. In catarrhal cases the sputum is often abundant and frothy, while it is rarely purulent, consisting mainly of mucous or mucopurulent secretion. This does not apply to the cases of tuberculous ulceration of larynx, where there is often profuse salivation and frothy sputum. But apart from general condition, febrile disturbance and appearance of sputum, it is common for tuberculous patients in whom the primary disease is quiescent or inactive to suffer from symptoms, not only of bronchitis with excessive cough and

wheezing, but from paroxysmal asthma. Dyspnœa is a common occurrence, and especially of a spasmodic character in cases infected with the diplococcus pneumoniæ, and also with the micrococcus catarrhalis. As a rule, spasmodic asthma with a latent tuberculous focus in one or both lungs is due to the invasion of one or other of these two organisms. In one case it has occurred with a staphylococcus aureus, but this is rare and usually uncomplicated with tubercle.

(*c*) *Bacteriological examination* of the sputum for secondary organisms.—The following are the most common catarrhal and other pathogenic organisms found: (1) Micrococcus catarrhalis; (2) bacillus Friedländer; (3) Fraenkel's diplococcus pneumoniæ; (4) a diplo-streptococcus; (5) staphylococcus aureus, etc.; (6) a streptococcus; (7) bacillus coli communis (rare).

It is not always that a pure culture of one of these organisms is obtained. It is more common to find three or four present on the first culture medium with one in large preponderance. A sub-culture is then made from the one that is in excess, and this should first be investigated.

(*d*) The *test of the opsonic index*.—As Inman in his admirable paper states, in the opsonic index (discovered by the researches of Almroth Wright) we have a means of measuring a deficiency as well as an increased production of protective substances to the invasion of bacterial organisms. In the febrile conditions of pulmonary tuberculosis Inman established the inverse ratio of the opsonic index to the temperature, and when dealing with uncomplicated pulmonary tuberculosis, we can estimate its activity or the reverse by carefully watching this ratio.

Where a secondary complication is present no means other than the estimation of the opsonic index exists by which we can with certainty determine whether the febrile disturbance (if such is present) is due to the tuberculous

toxæmia or to that of the secondary infection, or to both.

Therefore in all cases which seem to be suffering mainly from the results of secondary infections, though we may be largely guided by the physical signs and symptoms, and by the preliminary examination of sputum and the isolation of certain catarrhal and other pathogenic organisms, we are to some extent working in the dark when we are guided by these facts alone.

The investigation of the opsonic index first to tubercle and in turn to each of the other secondary bacteria is an elaborate one, and has been worked out by Inman and recorded in a few cases in the paper referred to. It is not feasible in the majority of cases, but in cases of doubt it is better to have the opsonic index to tubercle investigated even if this alone is possible. The difficulty of such a complicated research makes it necessary to rely in large measure on the first three considerations. But let me impress the fact that in a febrile case, or even in a case of pulmonary tuberculosis with wide oscillations of temperature which is not necessarily febrile, the inverse ratio between the opsonic index to tubercle and the temperature is an important aid to the differentiation between the toxic effect of the tuberculosis and that (if present) of the secondary organism.

The whole subject of the treatment of secondary infections is still in its infancy, and I have ventured to tell you plainly some of the reasons why I think the success of treatment in some of my cases at the Brompton Hospital has been extremely variable. And yet, as I have stated, to judge correctly whether the patient is suffering from the toxæmia of a particular secondary organism is not possible in the majority of cases because of the elaborate nature of the investigation. In most cases we must be guided by physical signs and symptoms, and if several organisms are present we

should try in the first instance a vaccine prepared from the preponderating one. If this is not successful, and we are still convinced that the symptoms are not due to the tuberculosis, it will be necessary to have other vaccines prepared and try each in turn. When one pathogenic organism alone is present this difficulty does not arise.

The technique of the preparation of vaccines need not detain us. When the sputum is collected the mouth should first be rinsed with a dilute antiseptic solution. Formalin is the antiseptic employed at the Brompton Hospital. The early morning sputum should be obtained. A culture is made on agar or gelatine, and if necessary sub-cultures are made.

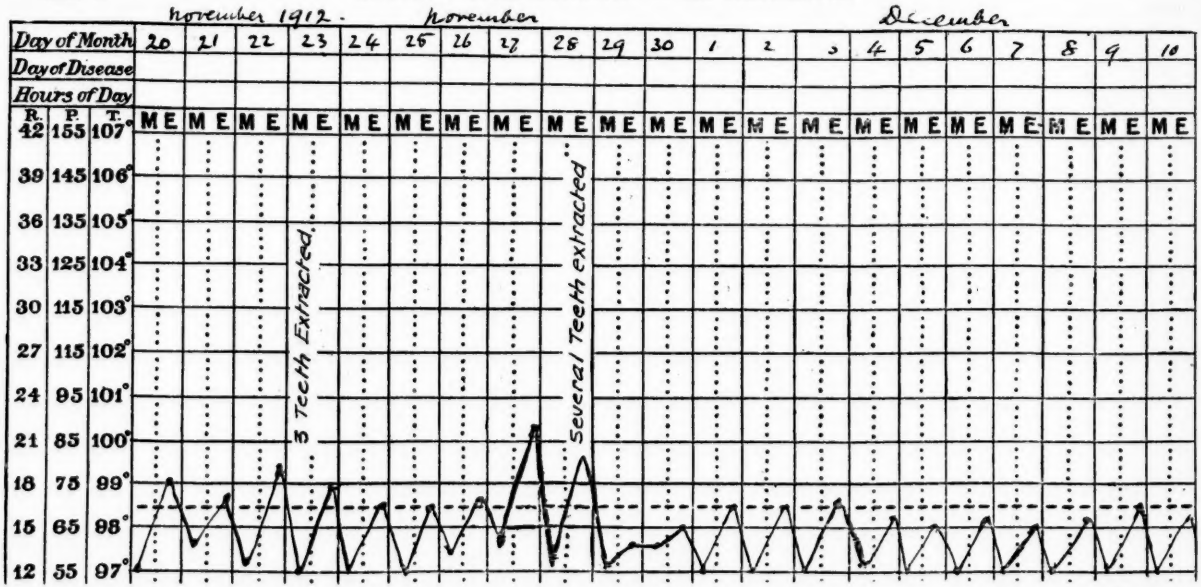
The methods of the injection of vaccines will be described in the narration of cases.

If there is reason to believe that the febrile disturbance is out of all proportion to the area and activity of disease as expressed by physical signs and tuberculo-opsonic index, the teeth should first be examined.

In hospital patients *pyorrhœa alveolaris* is a frequent cause of septic toxæmia, and the removal of exceptionally bad teeth or the treatment of others when pyorrhœa is present frequently has a marked effect. Before proceeding to vaccine treatment this must be carefully considered.

Two cases are given to demonstrate the improvement resulting from treatment for pyorrhœa. (Cases 1 and 2.)

CASE I. EFFECTS OF TOOTH EXTRACTION ON THE TEMPERATURE.

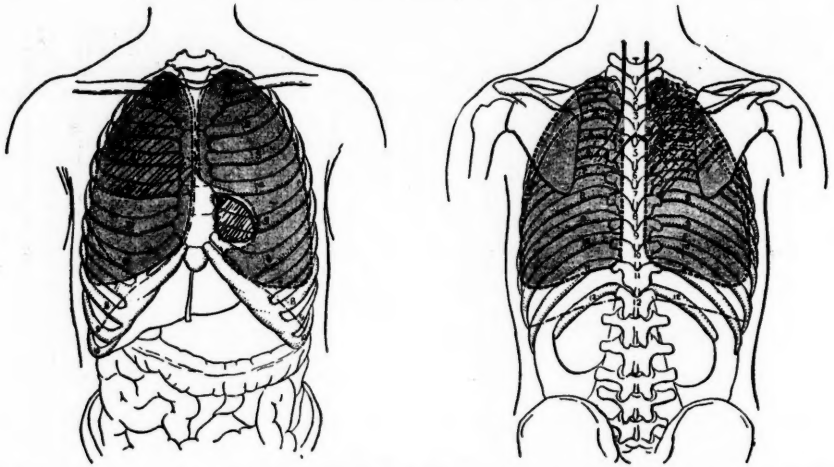


CASE I.—A. B., aged 21. Admitted Brompton Hospital November 1st. Chronic pulmonary tuberculosis, with pyorrhœa. Cough, loss of flesh, consolidation at right apex.

Opsonic index to tubercle: 1.28 before exercise, 1.43 after exercise; reaction after 1/5th mgm. of O. T. No T. B. found.

The erratic temperature was due to pyorrhœa alveolaris. General improvement occurred after extraction of teeth. Weight increased from 9 stone 1¼ lb. on Nov. 14th to 10 stone 1 lb. on Dec. 16th.

[CASE 2. EFFECTS OF TOOTH EXTRACTION ON TEMPERATURE IN A CASE OF CHRONIC PULMONARY TUBERCULOSIS WITH PYORRHŒA.



CASE 2.—T. C. C., aged 40. Admitted to Brompton Hospital June 21st, 1912. Bus conductor. Cough and expectoration 6 months. Pleurisy right side four weeks ago. Hæmoptysis in Jan., 1912. Physical signs of disease. Induration of right upper lobe with small apical cavity. Almost dry. A few inspiratory crepitant râles, disappearing after a few respirations. T. B. in sputum.

The erratic temperature was found to be due, not to the tuberculosis, but to pyorrhœa alveolaris.

The chart demonstrates the fall of temperature and diminished oscillation after tooth extraction.

Result: General improvement; diminution of cough and sputum; gain in weight of 3½ lb.

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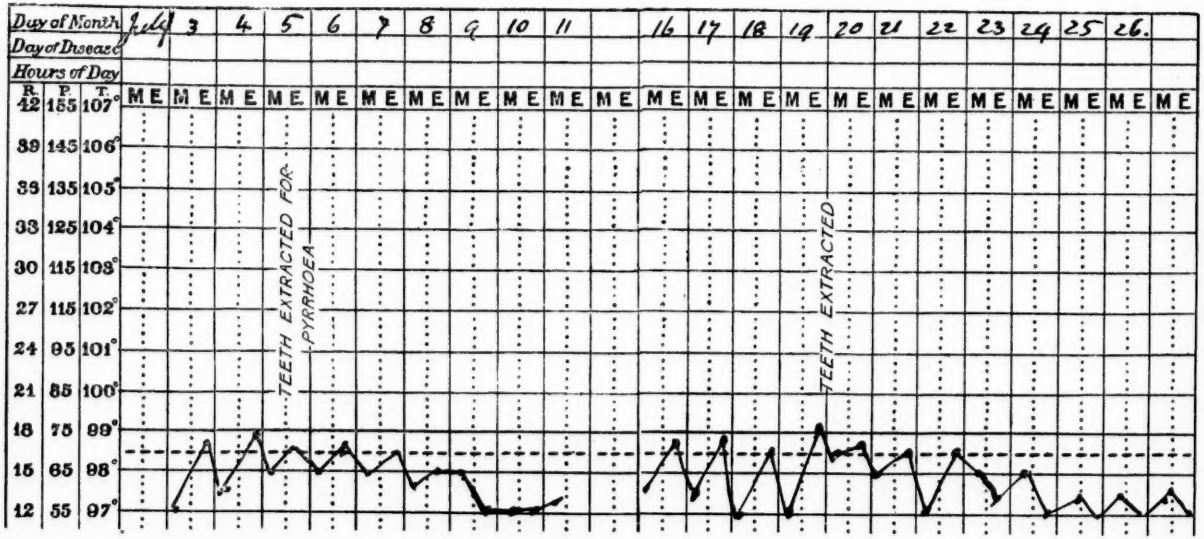
Day of Month
July 3 4 5 6 7 8 9 10 11 16 17 18 19 20 21 22 23 24 25 26.
Day of Disease
Hours of Day
R. P. T.
42 155 107°
39 145 106°
36 135 105°
33 125 104°
30 115 103°
27 115 102°
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M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E
TEETH EXTRACTED FOR PYRRHOEA
TEETH EXTRACTED

Temperature Chart Showing the Effects of Injection of a Dose of Pneumococcus Vaccine.

Case 3.—P. McD., æt. 35, November 1st, 1914.

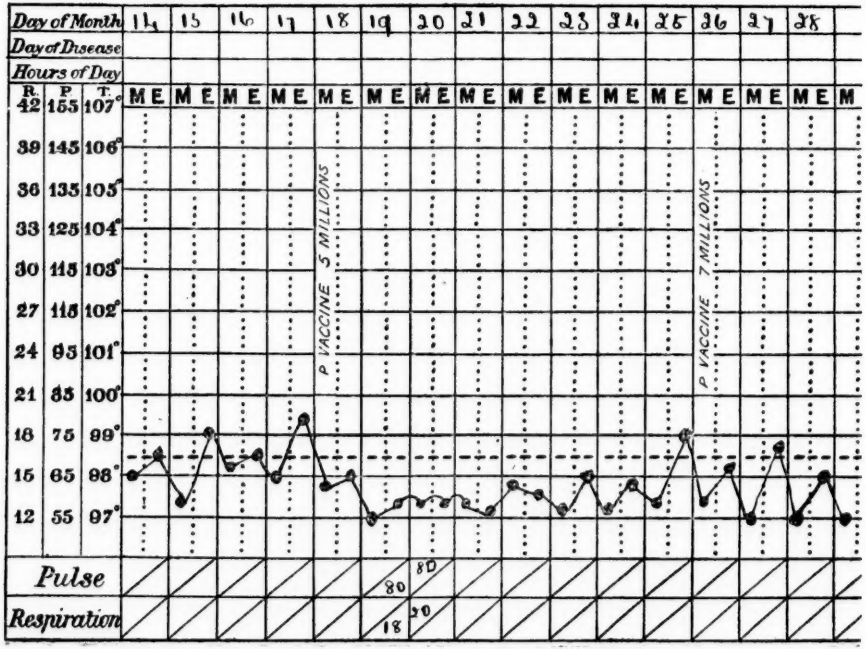
It will be observed that the first dose is given after a wide oscillation of temperature, and results in a fall of temperature with smaller oscillations. Without the guidance of the opsonic index, it is possible to judge by the temperature when to give the next injection. The indication is shown by a sudden rise in temperature, or an increase in the oscillation. If the original dose is followed by a decided reaction, the same dose should be repeated, but if, as in this case, a fall of temperature occurs (as on March 19th), an increased dose should be given on the next occasion (March 26th).

The above patient had chronic pulmonary tuberculosis of one year's duration, with a previous history of pneumonia at the age of 18, and bronchitis on many occasions since. His illness commenced with hæmoptysis. He has a bad family history, the father and two sisters dying of consumption.

Both lungs were affected, and there were abundant crepitant râles heard over the whole left lung and the upper part of the right. The pneumococcic injections were increased to 20 millions. Many of the crepitant râles had disappeared on discharge.

Case 3.—Effects on Temperature of a Dose of Pneumococcus Vaccine.

CASE 3. EFFECTS ON TEMPERATURE OF A DOSE OF PNEUMOCOCCUS VACCINE.



In the cases of pulmonary tuberculosis under investigation Inman adopts the following classification, which is also in vogue at Brompton Hospital:—

Group 1.—Resting febrile, cases with fever at rest in bed.

Group 2.—Ambulant febrile, resting afebrile.

Group 3.—Ambulant afebrile.

Group 4.—Working afebrile.

Each of these classes is divided for our present purposes into three sub-divisions, following again Inman's lead:—

(*a*) Infection by tubercle bacilli and secondary organisms.

(*b*) Infection by tubercle bacilli alone.

(*c*) Infection by secondary organisms alone.

The cases I have to present vary greatly in the results of treatment. Necessarily my cases fall under sub-divisions (*a*) and (*c*), and these again under febrile and afebrile groups.

The most successful are those of sub-division (*c*) falling under groups 3 and 4. [Quiescent tuberculosis with infection by secondary organisms alone.]

Others will be found in sub-divisions (*a*) and (*c*), but with febrile disturbance, groups 1 and 2, due in some cases to the double infection of tubercle and secondary organism, and in others to the preponderating influence of the secondary pathogenic bacteria.

Cases.

I.—Of active and progressive pulmonary tuberculosis with T.B. in the sputum complicated by secondary infection.

Cases 3 and 4.—Effect of *Pneumococcus* Vaccine.

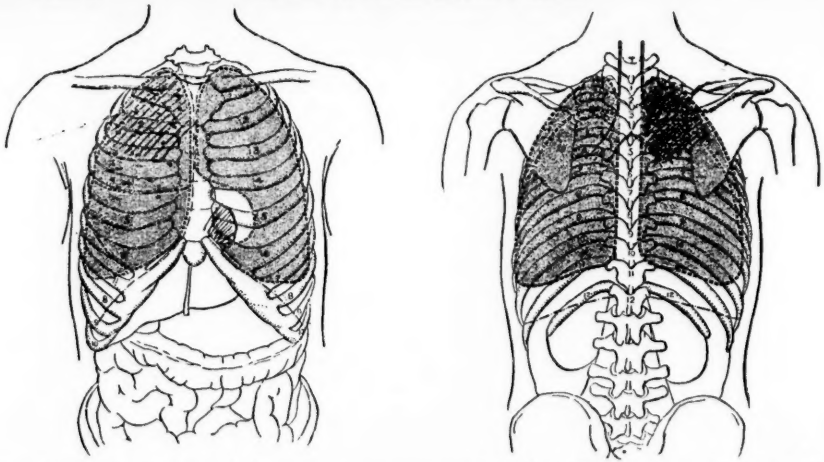
II.—Latent or quiescent pulmonary tuberculosis without T.B. in the sputum, in which the symptoms and signs indicated the presence of a secondary infection.

Cases 5 and 6.—Effect of *Pneumococcus* Vaccine.

Case 7.—Effect of *Micrococcus Catarrhalis* Vaccine.

Case 8.—Effect of *Bacillus Friedländer*.

CASE 4. EFFECTS OF PNEUMOCOCCUS VACCINE.



CASE 4.—Chronic pulmonary tuberculosis, asthma, pneumococcus infection. H. T., æt. 39, clerk. Admitted to Brompton Hospital Aug. 28th, 1912. Discharged Feb. 8th, 1913. Wife has pulmonary tuberculosis, with asthma. The patient had a profuse hæmoptysis nine years ago, and again two months ago. Suffered on admission from cough, expectoration and paroxysmal dyspnœa. T. B. were found on July 30th and Aug. 29th.

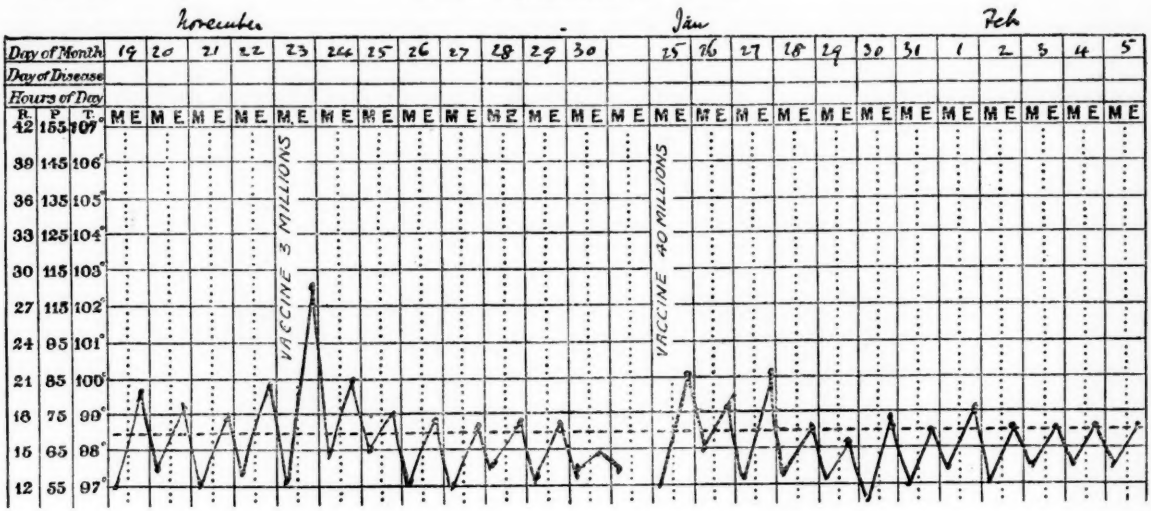
The physical signs shown in the accompanying diagram were those of consolidation of the upper part of the right lung, with weak breath sounds, increased vocal fremitus and voice resonance, with coarse inspiratory crepitant sounds over the dull area.

The patient was treated first with tuberculin without improvement.

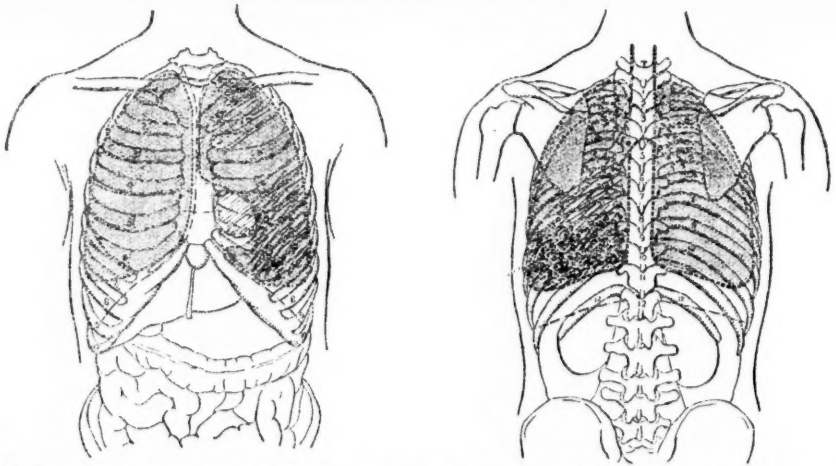
A culture was made from the sputum, and a diplococcus pneumoniæ (Fraenkel's) found. A vaccine was prepared and injected.

Result: Much improvement in dyspnœa, less cough and expectoration, diminution of crepitant râles, and complete loss of paroxysmal asthmatic attacks. Gain in weight from 10 stone 1 lb. to 11 stone 3 lb.

CASE 4. EFFECTS OF PNEUMOCOCCUS VACCINE.



CASE 5. EFFECTS OF PNEUMOCOCCUS VACCINE.



Case 5.—D. M. G., aged 20, single, living at home. General debility, loss of flesh and cough since July, 1910. Admitted to Brompton Hospital 13th Feb., 1911. Previously an out-patient since July, 1910. Symptoms more active since Sept., 1910.

Two sisters affected with pulmonary tuberculosis; one died of tuberculous pleurisy in July, 1910; and one sister has chronic pulmonary tuberculosis.

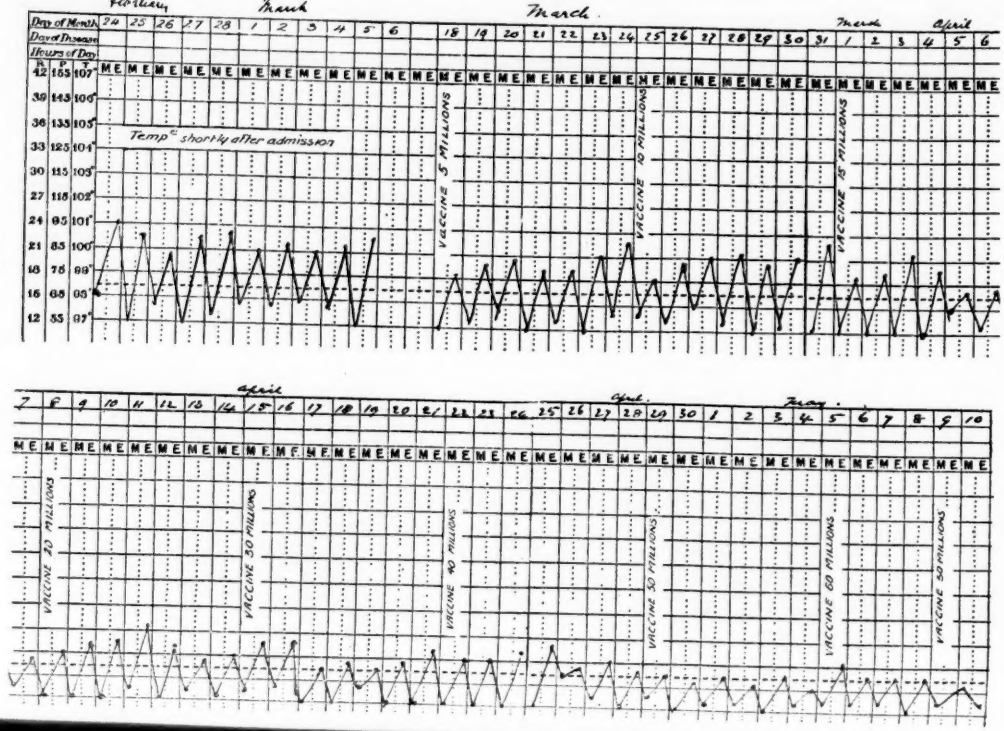
T. B. found in sputum on several occasions, Jan. and Feb., 1911. March 5th, cough worse. Signs of consolidation at left base.

The physical signs gradually improved under vaccine treatment, while the temperature gradually fell to normal.

The tubular breathing at base had disappeared by May 9th, though dulness and weak breathing with a few bubbling râles persisted. No adventitious sounds heard in right lung. Gain in weight from 8 stone 12 lb. to 9 stone 6¼ lb. Cough and expectoration much diminished.

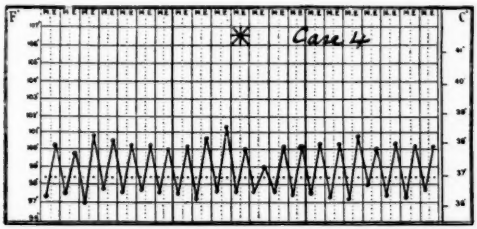
Continued well for six months, since which time she has been lost sight of.

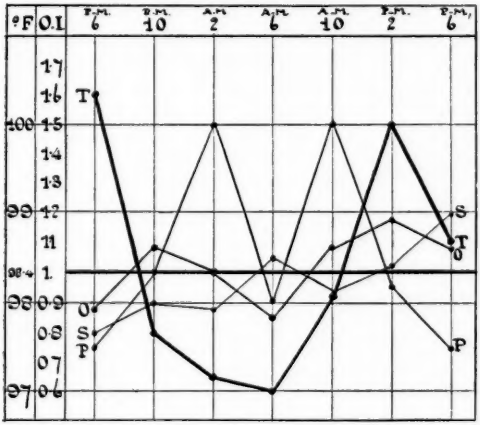
CASE 5. EFFECTS OF PNEUMOCOCCUS VACCINE.



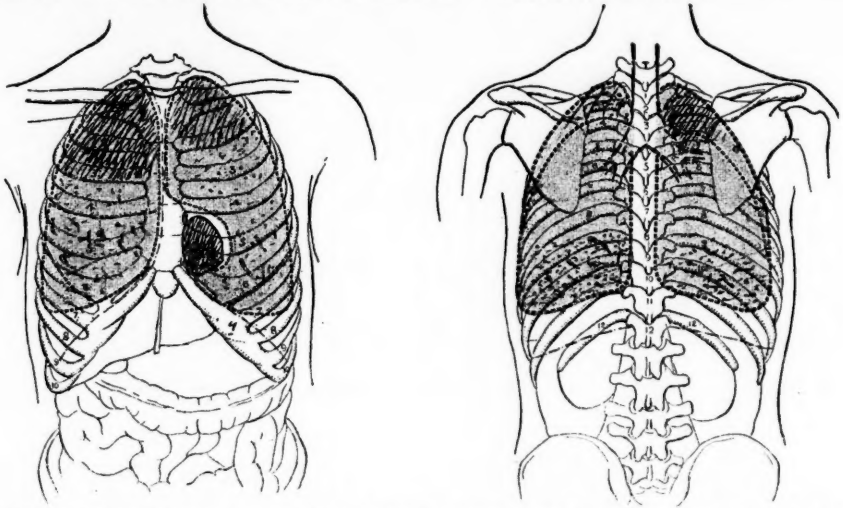
CASE 5.

A chart is appended showing an elaborate investigation in this case by Dr. Inman of the opsonic index to tubercle O, the temperature T, the opsonic index to the pneumococcus P, and to a staphylococcus S, all taken at intervals during twenty-four hours (taken from Inman's paper referred to above). It will be observed that the opsonic index to tubercle is not in inverse ratio to the temperature, and it may be concluded that the raised temperature is mainly due to the mixed infection.





CASE 6. CHRONIC PULMONARY TUBERCULOSIS. PNEUMOCOCCIC INFECTION.



CASE 6.—W. B., aged 30, labourer, was admitted to the Brompton Hospital on Nov. 10th, 1913. He contracted a cold in the previous February, with cough and expectoration, and this continued during the whole summer. The family history was good, with exception of one brother who died of pleurisy at the age of 23. The patient's wife developed consumption, and he nursed her from July, 1912, to August, 1913, when she died.

On admission, it is noted that the duration of illness was ten months, and that T. B.'s were found in the sputum on Nov. 12th, 1913. The physical signs were those of double apical consolidation, greater at the right apex. But there were abundant crepitant signs over the whole of both lungs, greatly exaggerated at the bases behind. The diagnosis made was of chronic pulmonary tuberculosis, with secondary catarrhal infection.

An examination of sputum gave an abundant culture of pneumococci only, without any mixed infection. A vaccine was prepared.

The difficulty with this patient, as in most hospital patients, is that the process of vaccine treatment is prolonged, and though the patient improved and felt better after each injection, the time of treatment in hospital is of necessity too short to produce the full effects.

The result of treatment was a diminution of basic râles, but a good deal of rhonchus and sibilus on discharge, instead of the crepitant râles. Considerable gain in weight ensued from 7 stone 9 lbs. to 8 stone and ½ lb., the general condition proportionately improved.

The temperature chart illustrates the effect of vaccine treatment in steadying the temperature.

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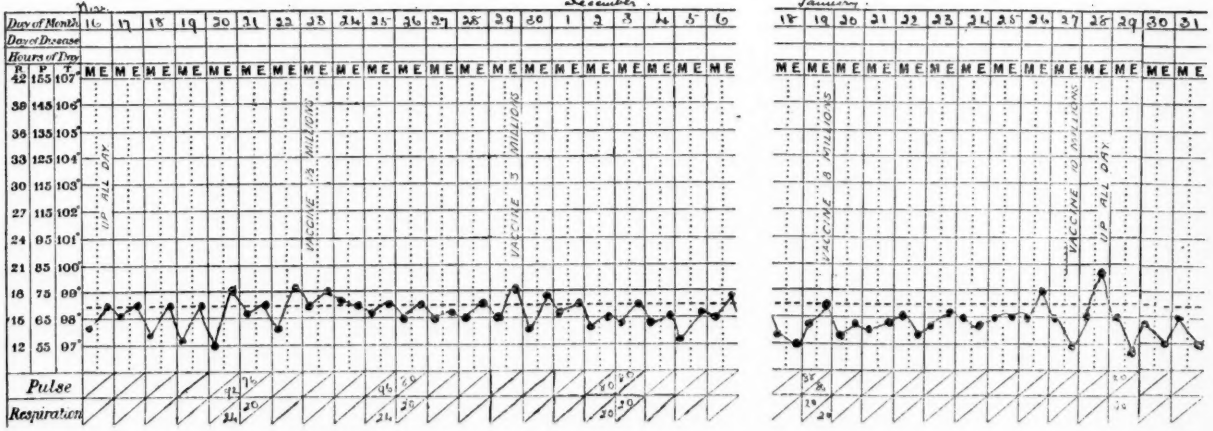
The temperature chart illustrates the effect of vaccine treatment in steadying the temperature.

CASE 6. CHRONIC PULMONARY TUBERCULOSIS. PNEUMOCOCCIC INFECTION.



Effect of Micrococcus Catarrhalis Vaccine.

Case 7.—Case of Chronic Pulmonary tuberculosis (quiescent), with secondary infection of micrococcus catarrhalis.

R.W., æt. 26, cook-housekeeper, admitted to Brompton Hospital Jan. 20th, 1914; discharged herself April 11th, 1914. Family history good, parents, brothers and sisters alive and well.

The patient has suffered from shortness of breath for two years, but has been much better last summer, until Nov., 1913, when she was taken ill with an acute catarrhal attack, with cough, short breath, night sweats and profuse expectoration. Some loss of weight succeeded the attack. On Dec. 24th, 1913, acute broncho-pneumonia supervened, and she has been in bed since. The sputum has been examined many times for T. B., but none found. I saw her first in consultation with Dr. Hamilton Bland, and advised an investigation of sputum and the preparation of a vaccine. The micrococcus catarrhalis was found in abundance, and the administration of a vaccine produced immediate improvement.

The physical signs of disease were those of induration of both apices, with abundant catarrhal signs (*i.e.* double crepitations) heard over the rest of both lungs.

The patient did not do very well at home, and at request she was admitted to my ward. On admission no T. B. were found by the antiformin method. The opsonic index to tubercle was 1.62 before exercise and 1.48 after exercise (*i.e.* strongly positive). The complement fixation test gave a negative result. The Von Pirquet cutaneous test also gave a negative reaction.

An examination of sputum for catarrhal organisms produced an abundant growth of the micrococcus catarrhalis, with a smaller culture of a streptococcus. A vaccine was prepared from the sub-culture of M. Catarrhalis.

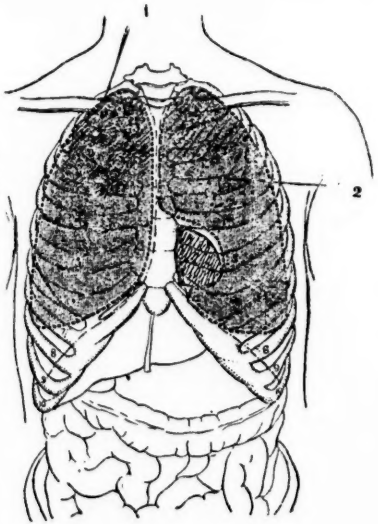
The effects of the injection of vaccine have on every occasion been immediate and beneficial. So marked has this been, that the patient herself showed a craving for each dose as it became due. On discharge the note is:—There is now no sputum. The crepitations have entirely disappeared from both bases, and only sparse crepitation sounds are now heard at the apices of upper lobes. The patient has gained 10 lb. in weight.

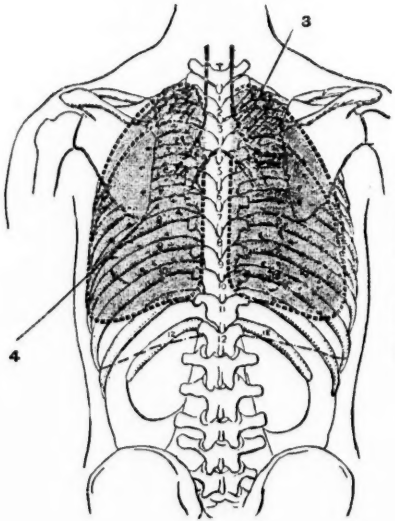
CASE 7.

1. Broncho cavernous breathing, fading towards middle lobe, where the respiration is bronchial.

At the base of the upper lobe impaired resonance, v. vibration, and v. resonance.

2. Fine, small and sharp inspiratory crepitations.

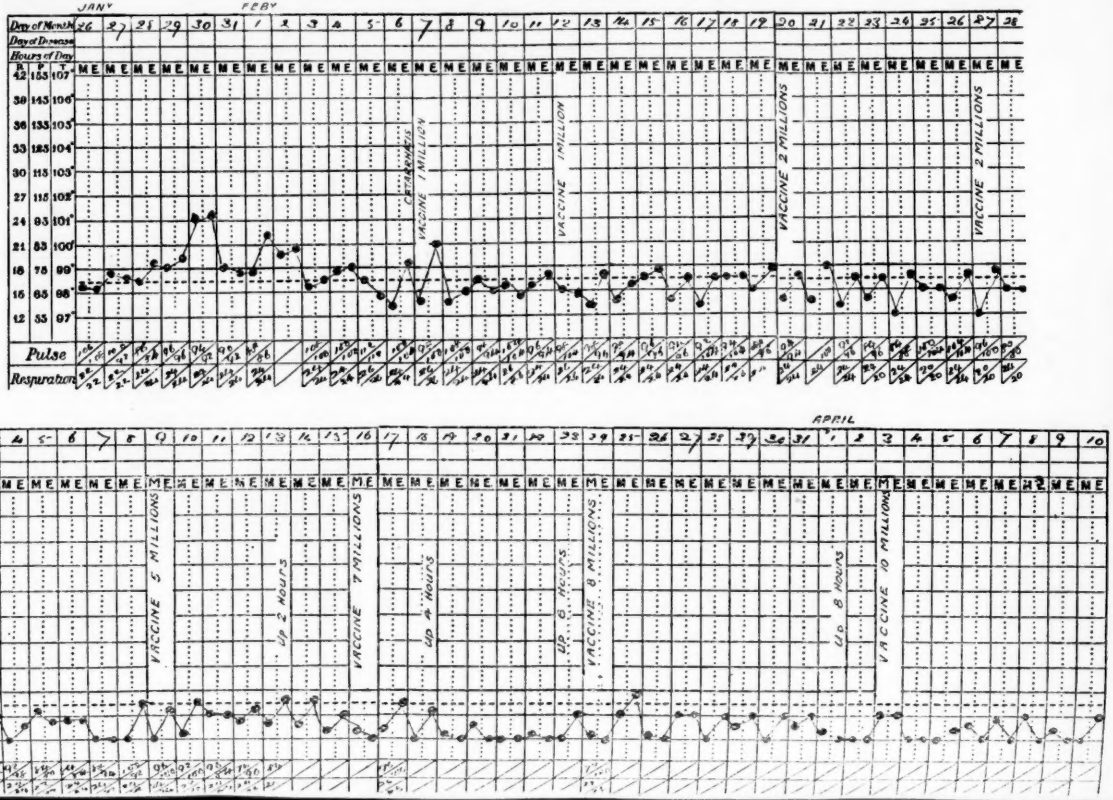




3. Prolonged expiration. All over right back a sparse crepitation with inspiration and expiration.

4. A few crepitant sounds, with inspiration and expiration all over back of left lung.

CASE 7. EFFECT OF MICROCOCCUS CATARRHALIS VACCINE.



EFFECTS OF BACILLUS FRIEDLÄNDER VACCINE.

CASE 8.—S. S., aged 65, farm labourer, admitted to Brompton Hospital Nov. 3rd, 1911. *Diagnosis probably old P. T., chronic pneumonia, bronchiectasis.*

EFFECTS OF BACILLUS FRIEDLÄNDER VACCINE.

CASE 8.—S. S., aged 65, farm labourer, admitted to Brompton Hospital Nov. 3rd, 1911. *Diagnosis probably old P. T., chronic pneumonia, bronchiectasis.*

In August, 1910, a severe attack of pneumonia; ill four weeks, short breath, cough and expectoration ever since. The expectoration has increased often a cupful in the night, with some fœtor; increased by change of posture; often much morning expectoration.

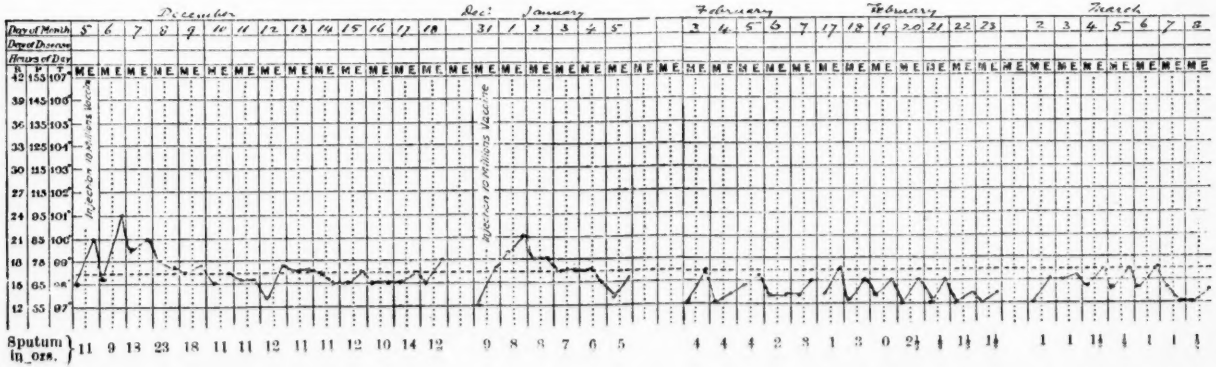
On admission presents much emaciation, cough, dyspnœa on exertion, with free expectoration. Movement of chest and expansion diminished. Well-marked induration of right upper lobe, with dulness, increased v. vibration and coarse broncho cavernous breathing, and increased voice respiration. One or two crepitant râles are present on inspiration. At the back of the right lung there are similar signs with cavernous respiration at apices of upper and lower lobes. No crepitant sounds or adventitious sounds except at the base of the right lower lobe, from angle of scapula downwards. Here there are numerous large inspiratory crepitant râles. The left apex presents signs of consolidation, but no superadded sounds. The fingers are clubbed.

DIAGNOSIS.—Chronic pneumonia, possibly of tuberculous origin, on account of the apical disease, with dilated bronchi. No tubercle bacilli were found on four examinations, including the antiformin method. On examination of the sputum for other organisms almost a pure culture of the bacillus Friedländer was discovered, and a vaccine made. A few pneumo-streptococci were also found.

Soon after admission on Nov. 3rd there was slight hæmoptysis to the extent of ℥ i, and on Nov. 11th about ℥ ii. The amount of sputum (measured) varied from 26 oz. per diem at most to 15 oz.

Vaccine treatment (Friedländer's bacillus) was commenced on Nov. 25th, with three millions; on Nov. 30th 6 millions; and on Dec. 5th 10 millions. The first febrile reaction succeeded this dose, and after several other injections a febrile reaction occurred. Increasing doses of vaccine were given every few days. Last dose of vaccine 25 millions on March 2nd. Sputum diminished from a maximum of 25 oz. to nil. The patient left with a small and variable amount of expectoration not exceeding ℥ i, and with diminished catarrhal sounds and signs.

SUBSEQUENT HISTORY OF THE CASE.—Gain in weight 25½ lb., from 8 stone 5½ lb. to 10 stone 3 lb.; a few crepitations at right base only; improvement in strength; five months' treatment.



It is obvious from the cases presented that the results of treatment by vaccine are variable. My conclusions, as I have stated, are that the best results are obtained from vaccine treatment when the primary tuberculous infection is not active and the secondary symptoms of bronchial catarrh or asthma are prominent. We meet with many such cases, and the symptoms are very chronic and intractable.

I have personally obtained the best results in cases of secondary infection by the *Micrococcus catarrhalis, Fraenkel's diplococcus pneumoniæ* and the *Friedländer bacillus.* A few of the cases have shown such marked and immediate improvement, that it appears to me to fully justify the vaccine treatment. A large number of cases of pulmonary tuberculosis are infected with an organism known for the present as a pneumo-streptococcus, in reality a streptococcus. I have rarely obtained more than temporary relief in such cases, and the results have been disappointing.

I trust that the narration of my own experience, with its successes and failures, may be of assistance to those who are conducting similar investigations, and may help to elucidate a subject which to me is one of supreme interest.

MIXED INFECTIONS IN PULMONARY TUBERCULOSIS, AND SOME GENERAL OBSERVATIONS ON TREATMENT WITH TUBERCULIN.[1]

BY

NOEL BARDSWELL, M.D. Edin., M.R.C.P. Lond. and Edin., F.R.S.E.,

Medical Superintendent, King Edward VII Sanatorium, Midhurst; Member of the Government Advisory Committee on Tuberculosis.

ON MIXED INFECTION IN PULMONARY TUBERCULOSIS.

FOR some years Dr. Radcliffe, the resident Pathologist at King Edward VII Sanatorium, has been working on this subject, and the results of his observations are detailed in his Weber-Parkes Prize Essay for 1912.

He would distinguish between a true secondary infection and an accompanying or intercurrent infection. By the term "accompanying infection" is meant a purely tuberculous process in the lung, with a subsequent infection of some other portion of the lower air passages by another microbe or microbes. By an "intercurrent infection" is meant the occurrence of quite distinct acute disease in a patient suffering from pulmonary tuberculosis, this new disease running its own definite course, and producing its own clinical phenomena. I imagine that Dr. Habershon's view is a very similar one, his Class (*a*) cases being what Dr. Radcliffe would term a true secondary infection, and his Class (*b*) cases what we recognise as accompanying or intercurrent infections.

True secondary infections, in which the infection by the tubercle bacillus is complicated subsequently by the presence of one or more than one infecting organism, occur in our

[1] A paper read at a discussion at a Meeting of the Bristol Medico-Chirurgical Society on May 13th, 1914.

experience less commonly than is supposed. In an investigation of thirty-three cases associated with all the signs and symptoms generally recognised as evidence of a mixed infection, infection by tubercle alone was demonstrated in twenty-five. In the other cases the following secondary organisms were found, streptococcus mitior, the influenza bacillus, a Gram positive coccus, a staphylococcus, and a diplococcus. Vaccine treatment of cases of advanced pulmonary tuberculosis, complicated by a mixed infection, is not encouraging, and here again our experience seems to be similar to that of Dr. Habershon. In the first place it is very difficult to isolate the infecting organism, and in the second place the associated extensive tuberculosis in itself usually renders the outlook hopeless.

Dr. Radcliffe further made a search for evidence of any appreciable degree of septicæmia by an examination of the blood by cultural methods. Twenty-two cases of well-marked disease were thus examined, with one positive result. In this case the infecting organism was the staphylococcus albus, and the patient was successfully treated by a vaccine.

Record of the patient from whose blood a staphylococcus was obtained :—

Mr. C., age 23, admitted April, 1909. Duration of disease, three months. Type of case : Chronic pulmonary tuberculosis. (Group 2.) Right lung, infiltration of apex of lower lobe. Left lung, extensive disease of upper lobe, with some consolidation of apex of the lower lobe. General condition very fair. Appetite and digestion normal. Daily range of temperature 98° F. a.m. to 100° F. p.m. Pulse rate 80 to 90.

During the first five weeks of his stay in the sanatorium he was treated on the ordinary sanatorium lines, and was kept at rest practically throughout this period. During these five weeks he gained six pounds in weight, his temperature fell to a range of 98° F. to 99° F., and his pulse rate to 80–85. Examination of his chest at the end of his first month showed slight improvement in the physical signs, the lower lobe of the right lung being clear of moist sounds. On May 17th he had an acute exacerbation, his temperature running up to 103.4° F. On

May 19th a specimen of his blood was taken for bacteriological examination. Throughout the week of May 23rd to 29th his temperature remained almost constant at a range of 100° F. a.m. to 100.5° F. p.m., and he suffered much from the malaise commonly associated with this degree of fever.

Bacteriological Examination.—From each of five tubes inoculated with blood the same organism was obtained. This grew well on ordinary media and liquefied gelatine. Morphologically, staphylococcus albus. Although the possibility of contamination could not be absolutely excluded, it was decided to try the effect of vaccine treatment, especially as the staphylococcus obtained was not the ordinary staphylococcus epidermidis albus, and because the patient's opsonic index to the organism tended to be low. The reaction of the organism in Gordon's tests is given in table :—

	Litmus Milk.		Neutral-red broth.	Nitrite.	Maltose.	Lactose.	Glycerine.	Mannite.	Growth on gelatine.	Liquefaction of gelatine.	Gram's stain.
	Acid.	Clot.									
a	–	–	–	+	+	+	+	+	+	+	+

Litmus milk became slightly more alkaline.

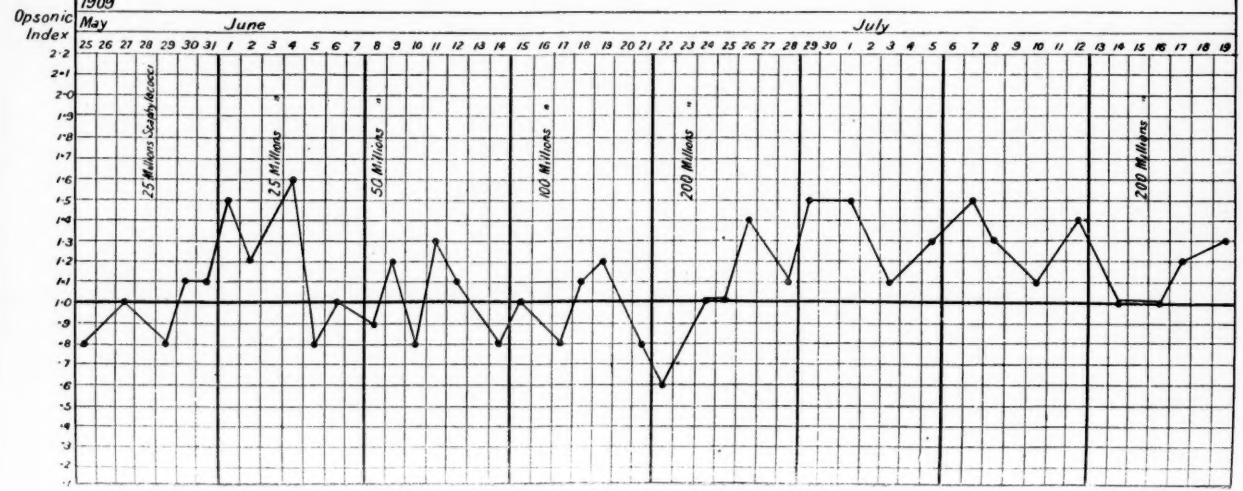
Treatment.—Was guided by frequent estimations of the opsonic index, and the initial doses were exceedingly small until the effect had been observed. The vaccine was given on May 28th, June 3rd, 8th, 16th, and 23rd. The immediate effect of the injection of the vaccine was a disappearance of the malaise. This was very marked, and the patient felt well and took his food better. With the subjective improvement was associated a fairly rapid fall in temperature. (*See chart, p.* 129.)

Examination on June 29th showed that there had been some extension of the disease, the right upper lobe having become affected. The lesions in the right lower lobe and in the left lung at that date were very similar to their condition on May 11th. No body weight was lost during these five weeks of fever. On July 15th another injection of vaccine was given. The patient's temperature at that time was fairly steady at a range of 97.6° F. a.m. to 99° F. p.m. Following the injection of the vaccine, the temperature immediately fell to a range of 97.6° F. to 98.2° F., and the patient made rapid improvement. On July 30th examination of his chest gave the following result :

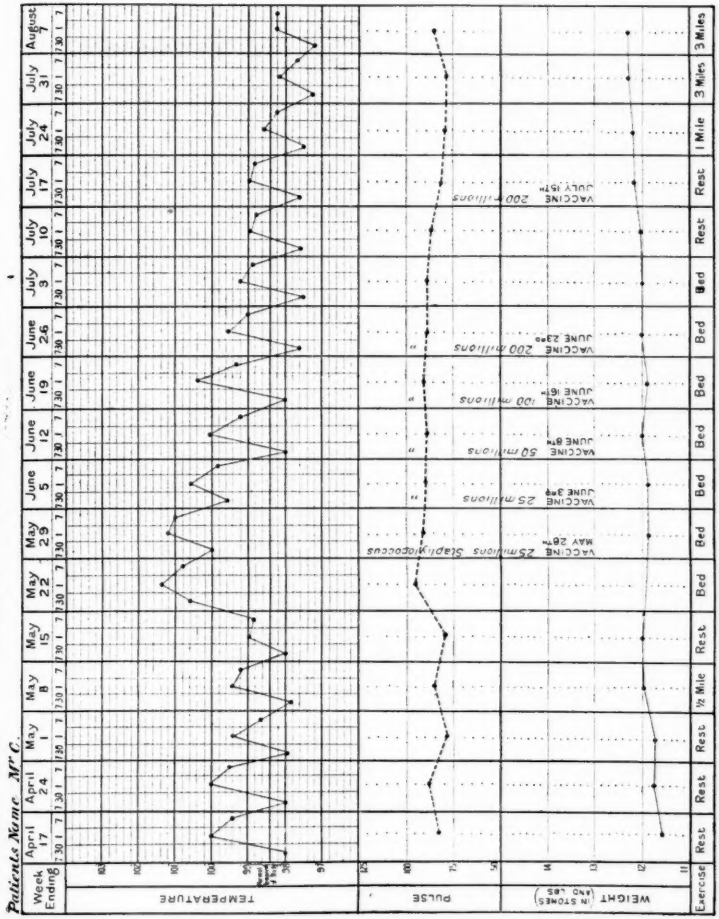
Name M.C.

CHART 7.

SHOWS THE EFFECT ON THE OPSONIC INDEX OF A NUMBER OF INJECTIONS OF A STAPHYLOCOCCUS VACCINE MADE FROM AN ORGANISM ISOLATED FROM THE BLOOD STREAM.



AVERAGE CHART FOR 7 DAY PERIODS.


Patients Name M^r C.
AVERAGE CHART FOR 7 DAY PERIODS.
TEMPERATURE
PULSE
WEIGHT (IN STONES AND LBS)
Week Ending
April 17
April 24
May 1
May 8
May 15
May 22
May 29
June 5
June 12
June 19
June 26
July 3
July 10
July 17
July 24
July 31
August 7
Exercise
Rest
½ Mile
1 Mile
3 Miles
Bed
VACCINE 25 Millions Staphylococcus MAY 26TH
VACCINE 25 Millions JUNE 3RD
VACCINE 50 Millions JUNE 8TH
VACCINE 100 Millions JUNE 16TH
VACCINE 200 Millions JUNE 23RD
VACCINE 200 Millions JULY 15TH

Adventitious sounds still present in the upper and lower lobes of both lungs, but much less numerous and less moist in character; sputum reduced in amount by more than half during the past four weeks. General health good and improving, walking three miles daily. Since July 30th, patient has made steady and satisfactory progress. (*Average temperature chart.*)

The result has been of value, as the patient's temperature was gradually brought down, but before this occurred the effect on his general condition was marked. (*Chart 7.*)

After treatment had been continued for several months, a second blood culture was undertaken, and as this proved sterile, and as the patient by this time was taking hard exercise without any effect on his temperature, treatment was stopped.

The accompanying and intercurrent type of secondary infection, such as an infection of the air passages with M. catarrhalis, pneumococcus, etc., as Dr. Habershon has pointed out, offers more scope for successful treatment with vaccines. The offending organism is more readily recognised, and a hopeful factor is that the tuberculous process is often limited and quiescent in character. I believe that this type of secondary infection is less commonly met with amongst patients in sanatoria than amongst patients attending hospitals in large cities, the explanation being that continuous living in pure air tends to clear both pulmonary and laryngeal lesions of many secondary organisms. Prophylactic measures against these secondary infections are of importance, such as removal of septic teeth and eradication of any septic foci in the upper air passages.

Tuberculin Treatment in Pulmonary Tuberculosis.

In the first place, we have to recognise that the theoretical grounds in support of tuberculin therapy are but slight. The experimental production of immunity to tuberculosis by inoculations of tuberculin has not been demonstrated; in fact, Austrian,[1] in a recent investigation, found that animals sensitised to tuberculin succumbed to infection by

[1] *Johns Hopkins Hosp. Bull.*, 1913, xxiv. 280.

tuberculosis as readily as control animals which had not received tuberculin. No protective or bactericidal properties have been demonstrated in the serum of patients or animals immunised to tuberculin. It is not surprising, then, that attempts to treat the disease on the lines of passive immunity by the use of sera have failed. The value of tuberculin therapy has to be judged by the results obtained in its clinical application. We must note, too, that since we have no certain knowledge of the action of tuberculin, its administration is a matter of empiricism, and in consequence a subject of keen controversy. At King Edward VII Sanatorium we now have nearly three years' continuous work with tuberculin behind us, and are in a position to form an estimate as to how far we have succeeded in obtaining the results claimed for it.

The advantages of treatment with tuberculin, as compared with treatment by general hygienic measures alone, are generally stated to be :—

(1) That in patients in which T.B. have not yet appeared in the sputum the percentage of cases which make a complete recovery amounts to nearly 100 per cent., and that subsequent relapses are prevented.

(2) That among patients suffering from early or moderately advanced disease, with T.B. in the sputum, the number of recoveries is greater when tuberculin is used.

(3) That the proportion of cases in which T.B. disappear from the sputum is appreciably increased when tuberculin is given, in addition to general measures of treatment.

Our experience on these points has been as follows :—

(1) That cases of pulmonary tuberculosis, in which T.B. are not found in the sputum, do equally well with or without tuberculin. For example, in 1907–8 120 cases of this type were treated in the Sanatorium, all of them being discharged apparently well. What is more to the point is,

that at the present time, alter a lapse of from six to seven years, only seven deaths have occurred amongst these patients—one from insanity, one from cancer, and five from tuberculosis. The remainder are well. I have no reason to expect that the results of our cases of this kind treated with tuberculin will be any less satisfactory or any more so. There is indeed little scope for improvement.

It is clear that the treatment of these bacillus-free cases with tuberculin is uncalled for, and that in view of the good results obtained with simple hygienic measures the records of such cases treated with tuberculin can supply us with no useful information as to the value of this form of treatment.

With respect to the second point :—

(2) In 1912 and 1913 we treated 200 favourable cases of early and moderately advanced disease (all of which had T.B. in their sputum) with tuberculin. Our immediate results were : Arrested or much improved, 68 per cent. ; stationary or worse, 16 per cent. A satisfactory enough result. But our records for 1910–11, when no tuberculin was used, show that the results of treatment of 200 similar cases were precisely the same.

With regard to the third point :—

(3) As to disappearance of T.B. from the sputum. Of the 200 cases just referred to, which in 1912–13 were treated in the Sanatorium with tuberculin, 27 per cent. lost their bacilli before discharge ; but again, of the 200 cases of the same type treated without tuberculin in 1910–11, the percentage figure for loss of bacilli was almost identical, namely 27.5 per cent.

Further, with rigid selection of cases, excluding all save those with a limited apical lesion associated with complete absence of constitutional symptoms, the percentage figure for loss of bacilli worked out as high as 50 per cent., both in the case of patients treated with and without tuberculin. The

selection of case was the favourable factor in each series.

Although excellent results may indeed be expected from treatment by tuberculin inoculations (providing that they are carefully administered, and reactions strictly avoided), combined with the general measures of treatment as carried out in a sanatorium in the case of patients suffering from pulmonary tuberculosis in its earlier stages, our experience does not suggest that these good results are the result of the inoculations, since when general measures alone are prescribed equally favourable results are secured, and with greater security from possible mishap.

The following passages from the well-known work by Bandelier and Roepke,[1] two of the ablest and most experienced advocates of tuberculin, is pertinent to our experience. The limitations of tuberculin could scarcely be better expressed :—

" Attempts to reduce fever are not suitable for ambulant practice. Harm will generally be done by tuberculin in the case of badly-nourished patients. If, on economical grounds, hypernutrition is impossible, or when attempted is unsuccessful, it is better to dispense with tuberculin. Where also there is no time for regular measurement of temperature, where a fresh-air cure by night and rest for a few hours daily is impossible, where hydro-therapeutic measures are impracticable, where, lastly, there is no sense of personal hygiene and prophylaxis, then tuberculin injections alone will not prevent the spread of the disease ; it is best, therefore, to spare oneself and others the disappointment which must follow the use of tuberculin."

This sound advice is unfortunately often unheeded; at the same time; when tuberculin is given under the conditions

[1] Bandelier and Roepke, *Tuberculin in Diagnosis and Treatment.* Seventh Edition. London : Bale Sons & Danielsson. 1913.

thus laid down by Bandelier and Roepke, conditions which have been proven to have a markedly beneficial effect on pulmonary tuberculosis, it is manifestly difficult to estimate how much, if any, of the benefit that follows is due to the inoculations.

In conclusion, I should like to quote my impressions of tuberculin as stated in an Interim Report recently submitted to the Consultant Medical Staff of the Sanatorium;

" Our experience is that tuberculin is not a remedial agent which can be depended upon to revolutionise either our sanatorium results or our conception of the outlook for the average consumptive. Tuberculin has not proved itself to be a remedy in the ordinary sense of the term, and no immediate or striking results are to be expected from it, even in the most favourable cases.

" Tuberculin, as employed in the Sanatorium, in association with the favourable conditions which are secured by residence in the institution, exercises an influence on those cases in which steadily-increasing doses can be taken. The treatment produces (1) tolerance to considerable doses of tuberculin, and in many cases (2) an effect on the diseased structures. This local effect may be a source of danger.

" As to the kind of case in which it may be expected that tuberculin treatment is at least without unfavourable effect, our experience is that it is the patient with a good outlook who has rapidly responded to general hygienic measures, and who has shown evidence of constitutional vigour and recuperative power.

" In a considerable number of cases tuberculin, so far as can be judged from immediate clinical results, has no obvious influence on the lesions. The patient is gradually made tolerant to it, but this seems to be the only objective indication to its effect. Whether this tolerance is of value is a point which has yet to be established.

"Further, in a proportion of cases tuberculin is not merely inert, it is definitely prejudicial.

"As far as the Midhurst results show, tuberculin cannot be looked upon as a means whereby an unfavourable case can be converted into a favourable one, or as likely to turn the scale in a patient's favour when his progress is doubtful, and certainly not when it is definitely retrogressive. More often than not in such cases it will do harm.

"Our experience shows that the administration of tuberculin is quite unsuitable as a routine method of treatment of pulmonary tuberculosis, and that its indiscriminate and careless use on a large scale can only end in harm."

These are not the conclusions which we had hoped to arrive at, and which personally I had anticipated, but our experience permits of none other.

Dr. LATIMER SHORT, County Tuberculosis Officer for Somerset, remarked that it had been very interesting to hear the varied experience of two such eminent observers working amidst different surroundings, and he noticed that Dr. Habershon appeared to have seen more striking results than Dr. Bardswell. This was quite parallel with his own experience in London and in Somerset, that dwellers in an urban district appeared to do better on vaccines than those in a rural district, presumably because the former were more liable to the influence of a mixed infection than the latter, and therefore the results of its specific treatment were more readily seen. Sanatorium routine itself treated the mixed infection, and a vaccine might not be so necessary as where less favourable conditions prevailed. He emphasised the necessity of first getting rid of any possible focus of infection, evidenced by oral sepsis, leucorrhœa or chronic tonsillitis, and quoted illustrative cases. Radical dental treatment was a very logical and important part of sanatorium benefit, and should be more frequently included in it. He mentioned that the Somerset Insurance Committee had recognised the fact in a very gratifying manner.

[1] *Preliminary Report on the Treatment of Pulmonary Tuberculosis with Tuberculin.* H. K. Lewis. 1914.

NOTE ON THE TREATMENT OF LARYNGEAL TUBERCULOSIS BY TUBERCULIN.

BY

P. WATSON-WILLIAMS, M.D. Lond.,

Lecturer on Otology, Laryngology and Rhinology, University of Bristol, and in charge of the Ear, Nose and Throat Department, Bristol Royal Infirmary.

THE value of tuberculins in the treatment of tuberculosis has been raised in the course of the discussion introduced by such distinguished authorities as Dr. Habershon and Dr. Noel Bardswell, and it may, therefore, be of interest to summarise very briefly the results which I have experienced with this form of vaccine therapy in relation to laryngeal complications of pulmonary tuberculosis. So exceedingly rare is primary laryngeal tuberculosis, that it is to be regarded as merely a possible pathological curiosity, the existence of which can only be determined by a *post-mortem* examination thus for all practical purposes primary laryngeal tuberculosis is non-existent, and hence we should only consider laryngeal manifestations of tuberculosis as complications of pre-existing, or at any rate co-existing, pulmonary lesions.

Furthermore, I would state at the outset that I have too little faith in tuberculin to rely a one on any varieties of tuberculin in the treatment of a patient, and I consider that, however valuable, it should be used as an adjunct to general hygienic and therapeutic measures, and oftentimes to other methods of local therapy, such as, on the one hand, all that modern sanatorium treatment connotes, and on the other ablation, galvano-cauterisation, submucous injections of guaiacol, and so forth. Nor do I fail to realise very fully the value of complete and absolute abstention from phonation

so as to ensure as far as possible laryngeal rest. Indeed, I believe that when speaking at the Annual Meeting of the British Medical Association in 1901 I was the first to insist on the importance of such physiological rest in laryngeal tuberculosis.

Many patients referred to me for laryngeal tuberculosis have been through a course of tuberculin injections since I introduced a discussion on the treatment of tuberculous laryngitis in 1911, but I have seen no reason to alter my practice or my views as to the value of such injections, and I therefore will cite from my remarks on that occasion.

My own experience with the use of tuberculin in laryngeal tuberculosis began in Jan., 1891, when I used Koch's original tuberculin. In the latter part of that year I reported the results obtained in four cases, but they were all advanced cases of pulmonary tuberculosis, with extensive laryngeal disease, and, as might now be expected, the results were not altogether encouraging. The initial dose in each case was 0.001 c.c. of the original fluid, gradually increased to 0.015 c.c. or more. In one case typical tuberculous ulcerations of the vocal cord healed rapidly. He had seven injections in all, gained 9 lb. in weight in his last three weeks in the Royal Infirmary ward, and left very greatly improved and with apparently a normal larynx.

What impressed me most of all in these cases was the very remarkable sedative effect of the injections, and in one case it was so pronounced that I gave the final injection of 0.1 c.c. solely for the purpose of obtaining relief from the intense pain in the larynx. Sprays and inhalations had been unavailing, but the injection was followed by marked relief within a few hours, and did not return during the remaining eight days the patient continued to live. As a matter of historical interest, I reproduce the sketches of the laryngeal conditions in one of these cases treated with Koch's

tuberculin twenty-three years ago (Fig. 1, M.H., Jan. 21st, 1891, Fig. 2, M.H., March 11th, 1891), showing marked improvement after injections.

FIG. 1.

FIG. 2.

Since those days we have learnt the importance of early diagnosis, and also the value of small doses, and so for some years it has been my rule to aim at just avoiding any definite febrile reaction. I generally use either bacillary emulsion, beginning with $\frac{1}{5000}$ grm. or P.T.O. in gradually increasing dosage from 0.0001 running up to 1.0 c.c., giving about two injections a week; and then continuing with either bacillary emulsion or else P.T., beginning with 0.02 c.c., and gradually increasing the dose. Having begun with the small dose, one carefully notes the occurrence of any febrile reaction as the dose increases, and when any given injection is followed by a rise of temperature the subsequent dose should be either the same or even a less amount, until no reaction follows; then the gradually increasing scale of dosage is resumed.

Personally I have been impressed with the value of tuberculins used in this way, and although in a successful result and arrest of the disease it may be impossible to precisely apportion the credit due to the tuberculin and the other general measures, the conviction remains that suitable cases treated with tuberculin run a more favourable course in consequence.

Holding such convictions, it would be unjustifiable to withhold any factor which makes for success in dealing with a mortal disease in order to prove to one's satisfaction that this or that factor is the more essential.

AUTO-PLASTIC INTRA-MEDULLARY BONE PEGGING AS A METHOD OF OPERATIVE TREATMENT FOR FRACTURES.

BY

C. FERRIER WALTERS, F.R.C.S.,

Assistant Surgeon, Bristol Royal Infirmary.

METHODS of operative fixation of fractures have for some years engrossed the minds of surgeons, particularly in the search for a perfect fixation material, that is to say, one absorbable and non-irritant, causing neither delay nor excess in the formation of callus, but all materials so far utilised have failed in one or other respect.

With the perfect fixateur in view and its necessary adjuncts, absence of irritation and complete absorbability, it occurred to me that auto-plastic intra-medullary bone pegging might offer a solution of the difficulties, for the following reasons: That Macewen's recent work on callus formation has proved that it is chiefly derived from the bone itself, growing from every surface in the most suitable pabulum, namely blood-clot at the site of fracture; that one has on several occasions seen compact bone exposed in a compound fracture and apparently necrotic, revitalised by vascular permeation throughout its whole extent; that in the comminuted simple fracture, which almost invariably unites without undue delay, pieces of compact bone must sometimes be entirely separated and yet retain their vitality, or are absorbed without detriment to union, for how often does one in these cases see necrosis or failure in union occur; that the transplantation of bone is often successful; that the implantation of living bone into the medullary canal at

the site of fracture should have no greater dangers attached to it than the introduction there of ivory pegs; that internal callus is formed and re-absorbed at the site of fracture, and it therefore would be probable that living bone as an intra-medullary peg might retain its vitality, or, like internal callus, be absorbed without causing delay in union.

Before attempting this method I found no record in the available literature of the introduction of living bone into the medullary canal for the fixation of fractures.

After my first three cases Greiffenhagen[1] reported two cases of pseudarthrosis which he had dealt with in 1911 by auto-plastic intra-medullary bone pegging, both of which failed.

In January of this year Albee,[2] of New York, reported a case of fracture of the neck of the femur in which he utilised, with success, a living bone peg from the patient's own fibula for fixation of the fracture.

Mr. Groves, in his excellent exhibition of the methods of operative fixation of fracture in March of this year, showed a skiagram which indicated the successful result of an intra-medullary bone peg for fractured tibia obtained by Professor Marnoch, of Aberdeen.

No doubt similar records have escaped my notice.

Four opportunities occurred to me in August, September and October last to judge the effect of auto-plastic intra-medullary bone pegging as a fixateur for fractures requiring operative treatment.

The first case was that of a somewhat delicate woman of 30, said to have suffered at one time from laryngeal tubercle, with a feebly-united fracture of the femur presenting one and three quarters of an inch of shortening; much disability remaining three months after the injury.

[1] Greiffenhagen, *Deutsche Ztschr. f. Chir.*, 1913, cxxiv. 137. *Ueber den Wert der Hornbolzung und deren Technik.*

[2] Albee, "The Inlay Bone Graft as a Treatment of Ununited Fractures," *American Journal of Surgery*, Jan., 1914.

The fracture, situated just below the middle of the thigh, was exposed by an external longitudinal incision and the feeble lateral union divided, the bone ends were refreshed and replaced in their normal position by Lambotte's traction apparatus, after preparation of the medulla for the peg. A two-inch peg, half an inch in thickness, having been drilled at its centre, was cut from the tibia of the same side just below the tubercle, this was rapidly shaped with bone forceps to fit the medullary cavities, the drill hole having been threaded with stout Pagenstecher thread, the peg was introduced in its whole length into the medullary cavity of the lower fragment and pulled up into the upper cavity to its centre point after Mr. Groves's method. Fixation of the fragments was absolute, a quarter of an inch of shortening only remaining.

The periosteum and muscle was sutured with catgut and the skin with silk gut, all the latter sutures being passed from within out.

The limb was then fixed in a splint, devised by my house surgeon, Dr. Goodden, consisting of a zinc trough with foot-piece, and having a removable zinc cover overlying the femur.

A superficial suppuration occurred at one spot, causing slight temperature, but the wound had soundly healed in three weeks.

The after course was far less satisfactory. At first callus appeared to be forming, but after eight weeks there was no union. Percussion by a rubber hammer after Robert Jones's method was then employed, and although callus appeared, the femur remained ununited.

At the site from which the peg was removed callus also failed to appear, and in a cautious attempt to free some adhesions in the knee-joint the tibia cracked sub-periosteally.

This condition continued for six months, despite all attempts to obtain union. I then removed part of the bone peg and plated. The condition of the peg was of interest. The portion projecting into the upper fragment moved freely in the medullary cavity, and on its being removed by sawing through at the site of fracture, was found to be markedly thinned by deep smooth pits in the compact tissue, and was eburnated at its extremity, but apparently still living. The part of the peg in the lower fragment was vascular, firmly united to the neighbouring bone, and its compact portion almost completely converted into cancellous tissue, showing one's surmise that it might be dealt with as internal callus to be correct.

Following removal of the peg and plating, union took place normally both in the femur and tibia, the patient being discharged with firm union but with limited movement in the knee-joint.

The second case, in a powerful sailor, was identical as regards shortening, but union was firm. A similar proceeding was carried out with a peg two and a half inches in length, but fixation was not so good; the upper fragment having split longitudinally during separation of the bone ends; half an inch of shortening remained.

In this case the limb was put up in a similar manner, but three days later the original shortening was found to be present, the lower fragment with the peg acting as a wedge having been pulled by the powerful muscles into the upper medullary cavity owing to the longitudinal splitting of the compact bone. Extension was, therefore, applied and overdone, for although the alignment of the limb was good, and a quarter of an inch of shortening only remained, the upper end of the peg was shown by skiagram to have been pulled out of the medullary cavity, the compact bone of one side resting on that of the opposite side in the other fragment. A somewhat deeper suppuration occurred, and a sinus remained for some months, eventually closing, but union in the femur was normal as regards time.

This patient also had limited movement in the knee-joint from adhesions, and on being discharged celebrated this by a drunken bout and fell, fracturing his tibia also sub-periosteally at the site from which the peg was removed. This united rapidly, but now seven months after operative treatment the patient is still using sticks to get about, and has considerable disability from muscular atrophy and stiffness of the knee.

The next case was in a well-built man of thirty, who had fractured his right tibia six inches below the knee-joint. One and three quarters of an inch of shortening was present, and despite various attempts, extending over three weeks, to obtain accurate apposition and alignment, the fragments remained in bad position. A peg two and a half inches in length was taken from the crest of the tibia at the site of fracture and introduced in a similar manner to the above. Good alignment and practically no shortening was obtained. Here an aseptic course with primary union obtained. Owing to an improved aseptic technique callus rapidly appeared, but there was some delay in union. Excessive callus eventually appearing, firm union occurred, the patient resuming his ordinary work in fourteen weeks from the time of operation without any discomfort.

The last case, in a delicate man of twenty-five, was a fracture of the left tibia five inches below the joint, but identical as regards shortening and difficulty in reduction. A similar procedure was carried out and primary union occurred. Here again union was markedly delayed and callus very slow in appearing, but three months after the accident the patient could

walk on the leg in a Croft splint without discomfort. Later he discarded the splint, and although movement was still present, could walk eight miles without stick or discomfort. Now, six months after the operation very slight movement is still present, but he cycles and walks without pain, although a limp is noticeable, despite the fact that shortening is practically *nil*.

Can one arrive at any conclusions from these few cases? The method in its present form can certainly be said to be unsatisfactory, it is no better than other methods of intra-medullary pegging and inferior to plating, causing both delay in union and irritation. It is possible that the utilisation of bone containing less compact tissue for the peg, such as the fibula, with which medullary cancellous tissue would be placed in continuity with its like, might cause more rapid vascularisation and more rapid absorption or conversion into cancellous tissue, with, as a result, less delay in union and less interference with callus formation in excess or otherwise, and without risk of fracture of the tibia. It is possible that multiple drill holes in the peg might lead to its more rapid absorption, but one fears that this would impair its vitality; and the same may be said of drilling the peg centrally, splitting it longitudinally into layers, and re-uniting it by kangaroo tendon before introduction into the medullary cavity.

The first case certainly proves that bone may retain its vitality, that it may be fairly rapidly absorbed, and that it may be converted into cancellous tissue, being, apparently, dealt with as internal callus at the site of fracture. That mild sepsis reaching the site of fracture is not an unfavourable factor in the formation of callus is shown by the second case, in which union was the most rapid of the series. The sepsis in the first case was scarcely deep-seated enough to affect callus formation in either direction. Destruction of the medulla and consequent interference with local blood supply is not the important

factor in non-union, as Cases 2 and 3 united firmly without much delay. The fibula of the same or opposite side should be utilised as more suitable, thus avoiding the accidents that occured in Cases 1 and 2. The presence of the peg as a foreign body is not the only factor in non-union, as Cases 2 and 3 show, and the reason why callus is deficient in one case and in excess in another is yet to seek; with an explanation of this may come the solution of the difficulty.

Since going to press an article has appeared in the *Annals of Surgery*, of April, 1914, by Robinson,[1] recording five successful cases of intra-medullary bone pegging of fractured tibiæ, the peg being obtained from the tibia of the opposite side.

In conclusion, I should like to thank Mr. James Taylor for the many skiagrams taken and for the preparation of lantern slides.

ON THE OCCURRENCE OF TACHYCARDIA IN ASSOCIATION WITH PARENCHYMATOUS GOITRE.

BY

F. H. EDGEWORTH, M.D., D.Sc.,

Physician to the Bristol Royal Infirmary and Professor of Medicine, University of Bristol.

A LADY, aged 36 years, came to see me in November, 1912, and said that her thyroid gland had begun to enlarge at the age of 19 years, and that this enlargement had much increased at the age of 30, and had been accompanied by an increased rapidity of the rate of the heart. The condition had been

[1] Robinson, "The Treatment of Ununited Fractures of the Tibia by by Bone Transplants," *Ann. Surg.*, April, 1914, p. 495.

diagnosed as one of incomplete exophthalmic goitre. Various methods of treatment, based on this diagnosis, had been adopted, but with no result.

The patient was strongly built, muscular, and weighed thirteen stone. She had a placid manner. No tremor was present, nor any exophthalmos. Both lateral lobes and the isthmus of the thyroid gland were enlarged, the right lateral lobe to a greater extent than the left. No arterial pulsation or thrill could be felt in the gland. The pulse rate was 100 per minute and regular. The systolic blood pressure was 132 mm. Hg. The apex of the heart was in the fifth space internal to the nipple line, and no evidence of enlargement was found. Its action was regular and quiet, not flapping or slapping as is usual in exophthalmic goitre; the cardiac sounds approached a tic-tac, owing to the shortness of the first sound. No symptom or physical sign of myxœdema was present.

The patient was asked to discontinue the dried pituitary gland which she had been taking, and to see me again in a month's time. It was then found that the physical signs were unchanged. The pituitary gland, apparently, had not been slowing the rate of the heart.

Dried thyroid gland was then given—one 5-grain tablet every night. At the end of three months it was found that the patient had lost a stone in weight, the size of the thyroid gland had diminished to that of a normal one, and the cardiac rate had dropped to 80 per minute. The patient said she felt quite well. The thyroid gland was then discontinued. Twelve months later the patient was still in good health, with a thyroid gland of normal size, and a pulse rate of 80.

Incomplete cases of Graves's disease come under observation from time to time—cases in which there is absence of one or more of the four cardinal signs, exophthalmos, enlargement of the thyroid gland, tachycardia, and tremor. The question which arose in my mind on first seeing the patient whose medical history is recounted above was whether she was one of these incomplete or fruste cases, or whether the tachycardia might not be in association with a simple enlargement of the thyroid. For reasons to be given later, the decision was in favour of the latter alternative, and the treatment which was correspondingly adopted was successful.

McKisack[1] gave an account of some twenty-one cases of incomplete Graves's disease, in fifteen of whom exophthalmos was absent, but in whom the cardiac rate was increased to between 110 and 130 per minute. Such cases were considered to be due to hyperthyroidism, though without exophthalmos. To one case occurring at the age of puberty he gave dried thyroid gland with the result of cure, and this case too he considered one of hyperthyroidism.

A few weeks later Berry, in his Lettsomian Lectures,[2] made the following comments on McKisack's statements: "Since it is well known that thyroid extract and iodine are harmful in true Graves's disease, even in slight cases, whereas they are very beneficial in simple parenchymatous goitre, it is difficult to understand why the writer considered these cases to be atypical Graves's disease, and not ordinary simple goitre." Berry also stated that cases of simple parenchymatous goitre with some rapidity of pulse form an extremely common type of case.

McKisack, however, only recorded one case to which this criticism applies; his other cases—as far as the evidence goes—appear to have been true cases of incomplete Graves's disease. Berry's statement, "these cases," is unnecessarily sharp, and not justified.

Berry left untouched the important question of the diagnosis between parenchymatous goitre with some tachycardia and incomplete cases of Graves's disease, and of the causation of tachycardia in the former class of case.

The features which occurred in my case suggesting the former diagnosis were the absence of emaciation, tremor and exophthalmos, the placidity of temperament, and in particular the action of the heart, the action of which was not the flapping one of Graves's disease, but a quiet tic-tac.

The causation of the tachycardia is somewhat of a

[1] *Brit. M. J.*, 1913, I., 208. [2] *Lancet*, 1913, I., 583, 668, 737.

mystery. It is well known that division of one or both of the vagi in animals increases the frequency of the cardiac rate. It is possible that a similar condition exists in man. If so, the further supposition that the enlarged thyroid presses on one or other vagus will explain the associated cardiac condition. The disappearance of the tachycardia certainly coincided with the diminution in the size of the thyroid gland, whilst the normal action of the dried thyroid the patient was taking would be to accelerate the cardiac rate.

Such tachycardia, whatever its exact cause, is very different clinically from the tachycardia of Graves's disease, whether complete or incomplete, and it is not difficult to distinguish the two conditions.

NOTES ON A CASE OF LYMPHATIC LEUKÆMIA IN A CHILD AGED THREE YEARS.

BY

EDWARD CECIL WILLIAMS, B.A., M.B. Cantab.,

Physician, to the Royal Hospital for Sick Children and Women, Bristol.

THE lymphatic type is far and away the most common form of leukæmia met with in children. The following case is remarkable for the rapid progress of the acute symptoms (about seven days), and the extraordinary character of the terminal blood count, which showed the ratio of red cells to white cells to be 38.2 per cent. to 61.8 per cent.

J. B., male, aged 3 years, admitted September 17th, 1913, died September 18th, 1913.

Family History.—Mother died in child-birth. One other child living and healthy.

Personal History.—It is not definitely known whether he has had any infectious disease. Lumps have been noticed in the neck for the last six months. Child has got worse since the removal of tonsils and adenoids three months ago. Eyes became blackened a week ago.

Condition on Admission.—Perfectly conscious; hemorrhages into both eyelids; chest nil; enlarged glands in neck, axilla and groin.

Abdomen.—Liver enlarged two fingers' breadth below right costal margin; spleen enlarged to level of umbilicus; some free fluid in abdomen; some œdema of legs; no specimen of urine available for examination. T. 102.8, R. 48, P. 160.

September 18th, 1913.—6 a.m., T. 104° F., which quickly came down to 100° F., R. 32, P. 148, child sitting up in bed. 10 a.m., child comatose, hemorrhages over various parts of the body, some as large as a five shilling piece. 1 p.m., child died, comatose.

The following differential blood count was made in the Pathological Laboratory of the University of Bristol:—

3,000 cells counted.		
	*Abnormal mononuclears	98.7 per cent.
	Large mononuclears ..	0.6 ,,
	Polymorphs	0.4 ,,
	Eosinophiles	0.2 ,,
	Myelocytes	0.6 ,,

Ratio of red cells to white cells, 38.2 per cent. to 61.8 per cent.

According to Gulland and Goodall,[1] in chronic cases the white cell count is much higher than in the acute cases, 500,000 white cells per cm. are not unknown in chronic

* The lymphocytes are quite unlike those seen in normal blood, the size is slightly larger than that of erythrocytes, most are spherical, but some show protuberances; the nucleus is large, vesicular, stains feebly, and is usually spherical, but sometimes bean-shaped; the cytoplasm in some is slightly granular. The whole cell has a tendency to smear. In appearance it is somewhat like the large mononuclear cells of normal blood. The percentage counts were given on counts made on the total number of cells in films counted from end to end in straight lines, commencing at one margin and proceeding to the opposite, the lines being taken at equal intervals to avoid errors in distribution as far as possible. These agree with the appearances shown by the blood in the vessels of the organs sectioned. No blood was available for direct counting by dilution in a hæmocytometer.—J. R. K.-M.

[1] Gulland and Goodall, *The Blood: a Guide to its Examination, etc.*, Edinburgh, 1912.

lymphæmia, but in acute cases the white cells seldom exceed 150,000 per cm. It is difficult, however, to average for the acute cases, as many are merely the acute terminations of chronic cases, and in them the count is naturally high. I have not, however, been able to find any record of a similar ratio of red cells to white cells to the above, even supposing this be only the terminal picture of a chronic case. The suggestion of Boycott,[1] that in this condition some of the lymphocyte-like cells are really erythroblasts in the stage before any hæmoglobin is developed in the cytoplasm, may to some extent explain the nearly two to one ratio of whites to reds.

REPORT ON THE TISSUES, REMOVED POST-MORTEM, BY PROFESSOR WALKER HALL AND DR. J. KAY-MOUAT.

The following tissues were most affected :—

Nervous System.—The entire brain was riddled with hemorrhages, from massive hemorrhages destroying large areas of brain to minute capillary hemorrhages.

Kidneys.—Tubular nephritis with fatty degeneration, desquamation and necrosis of a few cells in scattered areas. The tubules are widely separated by lymphocytes. Hemorrhages are frequent in the intertubular connective tissues, especially around the convoluted tubes. The glomeruli are engorged, but show no hemorrhages.

Liver.—Capillary channels widely distended with blood. Hemorrhages common in the portal systems and sometimes around the central vein. The cells adjoining some portal systems are filled with large globules of fat, a few have undergone fatty necrosis, most thus affected only show slight chromatolysis, but in some it is complete.

Bone Marrow.—Showed a proliferation of lymphocytes to such an extent as almost entirely to replace other types of cells.

Lymphatic System and Glands.—Lymphatics engorged with lymphocytes. *Lymphatic Glands.*—The nodules are indistinguishable, the whole of each gland is enlarged by proliferation of lymphocytes and endothelial cells, polykaryocytes are larger and more numerous than usual.

Spleen.—Malpighian corpuscles obliterated by general lymphocytic proliferation.

[1] Boycott, Article in *General Pathology*, edited by Pembrey and Ritchie, London, 1913.

Thymus.—Lymphoid nodules distinct, thus differing from lymphoid tissue elsewhere.

The following organs were comparatively healthy :—

Lungs.—Congestion, catarrh and hemorrhage, excess of lymphocytes.

Heart.—Myocardium shows no fragmentation or segmentation, cross striation well marked, no fatty degeneration or infiltration. The vessels are dilated, but there is a remarkable absence of cellular infiltration or lymphoid accumulations. There are no epicardial, myocardial or endocardial hemorrhages.

Suprarenals,—Congestion, no hemorrhages or lymphocytic deposits.

Pancreas.—Islands of Langerhans are well developed, the glandular cells are those of a normal active gland, no hemorrhages.

Lymphatic leukæmia may assume clinically three principal forms : (1) The anæmic, with tendency to late hemorrhages ; (2) the purpuric, with tendency to early hemorrhages ; (3) the scorbutic, in which lesions of the gums and stomatitis are leading features. The clue to the diagnosis lies in the microscopical examination of the blood, the enormous increase of lymphocytes in a film at once revealing the true nature of a case.

The outstanding features of this case are :—

1. The number and extent of the cerebral hemorrhages present in the white and grey matter of the entire brain.

2. Great proliferation of all lymphoid tissue, the thymus though large being of normal structure.

3. The healthy heart ; the absence of fatty degeneration being remarkable.

4. The great number of leucocytes in the blood, these cells actually out-numbering the erythrocytes.

The two forms of leukæmia, the myeloid and lymphatic, do not represent processes of essentially different kinds, but the obvious characteristics of each are sufficient to warrant their separation. There is, however, an increasing mass of evidence to support the theory that they represent a sarcoma

of the leucoblastic and possibly of the erythroblastic portions of the bone marrow, rather than an infection. In support of this view may be mentioned: (1) It is impossible in the majority of cases of lymphatic leukæmia to distinguish the blood from that of chloroma; (2) lymphatic leukæmia is always fatal, this cannot be said of an infection; (3) the overgrowth of lymphocytes is useless, and useless overgrowth is practically identical, in its results, with tumour growth; (4) no constant toxin has been found in leukæmia.

I am indebted to Professor Walker Hall and Dr. J. Kay-Mouat for permission to use their pathological reports on the various organs made in the Pathological Department of the University.

Progress of the Medical Sciences.

MEDICINE.

Splenomegaly with anæmia.—Osler has recently referred to the "dust-heap" of diseases which exist under this heading, and which are being gradually separated out into distinct syndromes. A curious thing about them is the number of different affections which are cured or relieved by splenectomy. If we allow that true splenic anæmia is due to a poison arising in the spleen, then it is easy to see that removal of the spleen may remove the source of the mischief; but since it is clear that certain diseases due to syphilis and other causes do actually benefit by splenectomy, we must either conclude that these enlarged spleens produce secondary evils, or become culture grounds for the special poison concerned.

A most interesting announcement has been made by A. G. Gibson that he had found in a typical case of true splenic anæmia clear evidence of a dense growth of a streptothrix in the spleen. Stained by Wheal and Chown's method, black threads and masses could be seen. The threads were segmented and not branching, but breaking off at the ends into bacillary forms. It was certain that the threads were not fibrin, fibrous, or elastic tissue. Marked fibrosis of the trabeculæ and pulp, especially around the veins, was present. Similar appearances

of the streptothrix type were found in five other diseased spleens which he examined. Though considerable doubt has been thrown on the interpretation of these cases, it is probable that ere long some organism may be detected in such spleens. On May 8th Gibson showed a thick bacillus, non-motile and Gram negative, which he had isolated from another case of Banti's disease.

The discussions at the Royal Society of Medicine[1] and the work of certain German surgeons have shown remarkable results from splenectomy in many unexpected conditions. In 1895 Spanton could only collect a hundred cases in the last four hundred years, but of late it has been performed frequently. Taking Osler's classification provisionally, we find the following conditions are already separated :—

1. True splenic anæmia is usually marked by leucopenia and a low-colour index. It gradually progresses for some years, and is attended by hemorrhages, which may become fatal. The splenic enlargement precedes the anæmia, and the condition is later on often complicated with hepatic cirrhosis, jaundice and ascites, when it is called Banti's disease. If iron, salvarsan and X-rays fail, recourse is not infrequently had to splenectomy, which has a mortality of perhaps 12.5 per cent., but in the Banti state a higher rate must be expected.

2. Splenomegaly of the Gaucher type begins most often in children under twelve, and may attack several in one family. The spleen may reach a huge size, the average being seven pounds, and the liver too becomes very large. There is leucopenia, a brownish yellow pigmentation of the face and hands, patches of conjunctival thickening, epistaxis, bleeding from the gums and into the skin, but life may be prolonged twenty or thirty years. Erdman and Moorhead[2] have recently done splenectomy with great success in one case, and report ten others with eight recoveries.

3. Splenomegaly with acholuric jaundice is also a family disease, and sometimes hereditary. Chauffard showed that there is a remarkable fragility of the red cells in saline solutions. The duration is long, indeed it hardly shortens life, but patients are helpless invalids. The anæmia may be extreme, but sometimes leucocytosis exists. It appears that Spencer Wells's case of splenectomy in 1887 was of this type. The patient is still alive and in good health, though the fragility of the red cells continues, as sometimes happens. Essex Wynter and H. Thursfield[3] showed two cases of complete restoration to health after splenectomy, while Whipham brought forward a father and three children

[1] *Proc. Roy. Soc. Med.*, 1914, vii., Clin. Sect., p. 73 *et seq.*
[2] *Am. J. M. Sc.*, 1914, cxlvii. 213.
[3] *Proc. Roy. Soc. Med.*, 1913, vii., Clin. Sect., p. 82, *et. seq.*

all suffering from it since a febrile attack three years ago. Sir Bertrand Dawson reported successful operations in three young adults of probably the same type, but noted the presence of gall-stones and biliary sand, which he removed at the same operation. It may be interesting to notice that Aschoff [1] has recently shown that gall-stones do not always pre-suppose the occurrence of inflammatory catarrh of the gall-bladder, and that a cholesterin stone may be formed without any such condition if cholesterin is present in excess in the blood. This excess occurs in pregnancy, Bright's disease, jaundice, diabetes and, perhaps, typhoid. The amount may rise from the normal of 1.6 grm. per litre to 4.2.

4. Splenomegaly due to syphilis of the liver may closely simulate true splenic anæmia, the splenic features overshadowing the hepatic, and of this Osler gives two or three instances. Anti-syphilitic treatment may have little effect. Here, too, splenectomy has been done with success by Coupland and others. The uncertainty of diagnosis can, of course, be genearlly cleared up by the Wassermann test. In intractable cases of pseudo-leukæmia of the von Jaksch type splenectomy has been recommended, and French showed a case of complete recovery after the operation, but doubt has been thrown on his diagnosis. There is often here a lymphocytosis and many nucleated red cells.

5. Splenomegaly due to infective endocarditis may for a time be difficult to distinguish, but the short duration, persistent albuminuria or hæmaturia would be of assistance. Still it is remarkable that an exact picture of splenic anæmia with leucopenia may be present.

6. Splenomegaly from obstructive thrombosis is also said to exactly resemble splenic anæmia at times, and there may be a history of injury or strain pointing to the cause of the thrombosis. On the other hand, as Rolleston [2] remarks, thrombosis is not infrequently a late result of splenic anæmia, and Rodman and Willard [3] confess that experimental attempts to produce the disease by ligaturing the splenic or portal veins have entirely failed.

7. Tropical splenomegaly due to Kala-azar especially of the type seen in children on the shores of the Mediterranean, may closely imitate the disease, and of course in some cases of malaria the same difficulty may be felt, but generally the parasites can be discovered.

8. Splenomegaly secondary to cirrhosis of the liver may

[1] *Glasgow M. J.*, 1914, lxxxi. 108 ; also *Quart. J. Med.*, 1914, vii. 221.
[2] *Practitioner*, 1914, xcii. 470.
[3] *Ann. Surg.*, 1913, lviii. 601.

occasionally show very little symptom of the liver trouble. Indeed, "Naunyn and his followers regard latent cirrhosis as the real explanation of splenic anæmia." An Egyptian type, commencing with cirrhosis and marked fever, is otherwise indistinguishable from splenic anæmia, and here splenectomy at an early stage arrests the disease.

9. Finally, Eppinger and several German surgeons[1] have recently performed splenectomy for pernicious anæmia. Six cases are reported since August, 1913, all of which have improved, though it is too early to speak of a cure. In every instance the operation was followed by a great increase of nucleated red cells. It was to be expected that the removal of an enlarged spleen would reduce the facility with which the red cells are hydrolised, as that result has been observed in other conditions. On the other hand, no evidence has been given to show that anything but harm can result from splenectomy in the leukæmias.

Anaphylaxis.—McIntosh[2] in an interesting paper brings forward much evidence to show that the ordinary definite series of symptoms which occurs in the course of a fever are the results of anaphylaxis. These manifestations have hitherto been mysterious and unaccountable. Anaphylaxis is, he points out, a state of hypersensibility to some albuminous substance either existing normally or as the result of previous injections. It is the albuminous serum injected and not the toxin which plays the active part. Still it is an immunity reaction. Allergie is the local reaction of hypersensitive tissues. An incubation period of 6 to 12 days is usually required for the production of hypersensitivity.

In fevers the introduction of the antigen both sensitises the tissues and causes the development of antibodies during the incubation period. Endotoxins being formed act on the sensitised cells. Hence the rash in measles, scarlatina and small-pox, and in serum fever. In revaccination for small-pox after a short period the papule and areola are much more quickly developed from the hypersensitiveness of the patient.

Tuberculous patients show an extraordinary sensitiveness to Koch's tuberculin, but after repeated injections become desensitised, and until this is done immunisation with large doses cannot be carried out. The von Pirquet and Calmette reactions show local reactions from anaphylaxis, though the entire process is not yet explained.

In syphilis reinoculation in the early incubation period gives an abnormal papule with quicker development. In the secondary stage the patient is insusceptible, and no lesion

[1] *Surg., Gynec., and Obst.*, 1914, xviii. 243.
[2] *Quart. J. Med.*, 1914, vii. 272.

follows. The rash is due to the destruction of spirochætes in the skin and the toxins set free there. The tissues in the tertiary stage are hypersensitive, a skin reaction like von Pirquet's, called the Luetin test, is positive, and the gumma is an anaphylactic reaction of lymph vascular tissues. Parasyphilitic lesions are the response of hypersensitive nerve tissues with no power of regeneration. Hay fever is the reaction of mucous membranes hypersensitised by pollen proteid. Urticaria is an expression of hypersusceptibility of tissues to foreign proteins. The sensitiveness is either constitutional or acquired. Eclampsia is due to the reabsorption of placental villi. The mother is sensitised to the foreign or fœtal part of the placental protein. Indeed, one author suggests that parturition is itself an anaphylactic phenomenon due to the excessive absorption of some product of the child, and some evidence has been adduced in favour of this view.

Though we cannot at once accept all the teaching of this school, the theories do offer a reasonable explanation of numerous obscure phenomena, and are worthy of consideration.

Poliomyelitis.—From the prolonged study which has been given to the mode of transmission, some few facts have been obtained.

The virus with which Flexner and others[1] have been able to reproduce the disease in monkeys was for some time thought to be ultramicroscopic, like those of yellow fever and several other diseases, but it turns out to be a minute globoid body, like that found in rabies, and it passes through Berkefeld filters. Noguchi, employing his method of cultivating spirochætes, has grown them in ascitic fluid, with a fragment of sterile kidney tissue. Oxygen is excluded by a layer of liquid paraffin, and after five days' incubation an opalescence appears. The globoid bodies are arranged in chains or groups, and stained by Gram or Giemsa's method. They are constantly found in the central nervous system of infected persons, and the disease can be reproduced from them. Amoss also found them in blood films from infected monkeys during the acute stage. The virus, however, shows a preference for nerve tissue. It affects the whole nervous system, especially the motor neurons of the cord and brain, and exists even in the sympathetic ganglia. It is apparently soon swept out of the blood, which as a rule is incapable of conveying the disease to other animals, except for a short time after large quantities of the virus have been injected into it. Indeed, the injection of moderate doses fails to produce symptoms, though they regularly follow injections into the brain or cord. The cerebrospinal fluid, in like manner, fails to convey the disease, and when

[1] *J. Exper. Med.*, 1913, xix. 205, 411, *and* 1914, xx, 212.

taken from convalescents, rarely contains the neutralising bodies.

The virus is highly resistant, since it remains active in glycerine for two years, or for a year in 0.5 per cent. carbolic, and after freezing for some weeks, though it is easily killed by heating to 50° C. for half an hour, by permanganate, menthol, or peroxide. It enters the human body chiefly through the nasal mucous membrane, rarely if at all in food. Petterson and others found it in the nasal secretion of infected persons and their healthy companions, who may act as " carriers," and also in the dust of rooms where infected persons live, and on their handkerchiefs. Convalescents may remain infectious for months or years, though probably the majority cease to be so in four weeks. There is some evidence, too, that the disease may exist in rabbits or other animals under another form, but regain its old power when returned to man or monkeys. There are great difficulties in deciding as to the actual mode by which infection is transmitted. It is a rural rather than a city disease, and rarely spreads in an institution where patients are in close contact. Rosenau apparently showed that it could be conveyed by the stable fly Stomoxys Calcitrans, but Sawyer and Herms[1] failed to confirm this; besides, the blood is rarely infective, as we have seen. The bug, too, has been credited with its transmission, but on the whole there is little reliable evidence in favour of insect or animal carriers. Besides the large numbers of persons who are immune there are many abortive cases. Wickham estimated the latter at from one-fourth to one-half of the whole. By various tests they can be shown to be real instances, though paralysis is absent, and they certainly can transmit the infection during their convalescence. It has been remarked that outbreaks come in waves once in two or more years. Thus during 1911 and 1912 there were numerous epidemics in Great Britain, and comparatively few cases since. In Sweden, after a quiet period, 3,800 cases appeared in 1911; and since about 16 per cent. usually die, and the majority of those who recover are crippled for life, the disease is most serious. As regards the periodicity, it is possible that climatic influences are important, or that most of the susceptible persons are rendered immune by unrecognised abortive attacks, but neither theory is probable. Flexner[2] has suggested that the organism itself has a cycle of variations in virulence as time goes on, which is the cause of the epidemic waves. When it was passed through a series of monkeys for some years a rise of potency took place, and lasted for perhaps three years, and then a gradual fall to the original state took place,

[1] *J. Am. M. Ass.*, 1913, lxi. 461.
[2] *J. Exper. Med.*, 1914, xix. 203.

which is certainly suggestive. Colliver[1] calls attention to a symptom in the preparalytic stage which may be of use. It is a peculiar brief tremor or twitching affecting one or more muscles or limbs, and recurring at varying intervals. Sometimes there is a slight cry, and sometimes during a tremor the child seems to lose consciousness for a few seconds, though there is never definite coma. There is some doubt, however, whether this tremor does not also occur in cerebrospinal fever. The spinal fluid after the first week is clear, colourless, reduces Fehling, and shows no bacteria, but only mononuclear cells and much globulin, which is in marked contrast with that of cerebrospinal fever. The fluid during the first days of the attack indeed may be cloudy, and show polymorphic cells. In typical cases there is a stage of incubation of three or four days, a febrile stage of one to seven days, with pain on passive movement of the limbs, and lastly the stage of paralysis, cerebral, cerebellar or spinal, though in some cases no symptoms appear before the paralysis. This may go on increasing for a week, and cause death by respiratory failure. There is finally a period of improvement, which under treatment may continue for years.

Artificial Pneumothorax.—The idea of treating phthisis by opening the pleura and immobilising the lung is an old one. It began with suggestions made by Carson (1821) and Ramadge (1834),[2] but was put into practice by Cayley (1885), Potain (1885), Forlanini (1888), Murphy (1898), Lemke (1899), and Brauer (1905). Since then it has been extensively employed.

At the present time the primary operation is either an incision or a puncture. The latter is generally chosen in this country, though in difficult cases where many adhesions exist an incision may be necessary. The method usually employed in Germany and Switzerland is by an incision. Local anæsthesia in any case must be carried out thoroughly to prevent shock, and an elaborate apparatus for introducing nitrogen is always used, by which the exact intrapleural pressure can be seen and regulated, and the amount of nitrogen passed into the pleural cavity is known. As a precaution against the accidental introduction of nitrogen into a vein [either by puncturing it or by exposing an opened vein to a body of gas at high pressure, and in this way causing embolism, with possibly fatal results.] E. Rist, Morriston Davies and others first fill the apparatus with oxygen. If this enters a vessel it combines with the hæmoglobin, and is absorbed harmlessly. After 50 or 100 cc. have been thus introduced nitrogen is turned on. Authorities differ as to the amount of nitrogen which should be injected on the first occasion, some giving 100 cc. and others a larger

[1] *J. Am. M. Ass.*, 1913, lx. 813.
[2] *Quart. J. Med.*, 1913, vi. 259.

amount. The intrapleural pressure, as shown by the manometer, is carefully watched to prevent any excess. A positive pressure of 1 to 3 mm. of mercury is sufficient to keep the lung compressed, when no adhesions exist. To maintain this collapse permanently, as the resistance decreases it is necessary to refill the pleura with nitrogen from time to time. At first this is done by a simple puncture every day or two, but later on once in every month or six weeks. X-ray examinations show the compression and general condition of the lung on each occasion. Among the accidents which may occur, a pleural reflex with collapse tachycardia and delirium, practically never arises if complete local anæsthesia of the tissues and pleura is attained before the puncture is made, and if we avoid the rapid production of a high positive pressure.

Deep emphysema occasionally gives pain and discomfort. Indeed, pain is not infrequently felt if too high pressure is produced, but is not lasting. Displacement of the heart must be guarded against by using the manometer and fluoroscope. Pleural effusions frequently occur, and are of no consequence except in rare cases, where if the pressure is too high it may be necessary to withdraw some of the gas. Empyema may occur from a fresh infection, or from wounding a diseased lung by using a sharp trocar instead of a blunt one.

What patients are suitable for this treatment? Cases where unilateral lesions exist are preferable, but slight disease in the other lung is no bar to the operation. Amrein and Lichtenhahn,[1] of Arosa, urge that the greatest care be taken to avoid cases of active disease in the other lung. Other writers say there should be at least two-thirds of the other lung in a healthy state. The acting lung sometimes improves remarkably after the more diseased one has been collapsed, though occasionally it fails to respond, and the gas has to be withdrawn. Even laryngeal trouble is benefited by the cessation of cough. Amyloid kidneys and general miliary tuberculosis counter-indicate the treatment. Hæmoptysis is quickly stopped by the operation. Indeed, no other method of controlling it is so effective. As much as 500 cc. of nitrogen may be introduced at one sitting to stop severe bleeding.

How far should this treatment be applied to early cases in place of or with sanatorium treatment? Certainly some recover wonderfully well and quickly. H. Morriston Davies,[2] indeed, holds that no progressive case is too early, and points out that lungs with very little disease respond more readily to the treatment, and that failures from general adhesions are fewer. Again bronchiectasis, chronic pneumonias, as well as

[1] *Ibid.*, p. 487.
[2] *Brit. M. J.*, 1914, i. 897.

phthisis, have been claimed by some authors as giving excellent results. However, in bronchiectasis a permanent cure is not to be expected, but only great improvement as long as compression is continued.

It is acknowledged that in unilateral phthisis, when fever, cavities, and much expectoration are present, the operation causes a rapid disappearance of the symptoms, a gain of weight and general improvement, though if the pressure is allowed to fall too soon a relapse may take place. How long then should compression be kept up? This is difficult to answer. Until the tuberculous lesions are cured, even though bacilli are absent from the sputum, it is better to go on refilling with nitrogen. In many cases there is complete healing. Cavities are obliterated, their walls are pressed together and unite. Abundant fibrous tissue grows up around the bronchi and vessels where ulceration has taken place, and the same tissue encloses the small pneumonic and tuberculous foci. The liquid discharge is squeezed out of the collapsed lung, and, most remarkable of all no fresh tubercle has ever been found in it.

Discussion has arisen as to whether this great fibrous hypertrophy is the result of the tuberculous toxin. It has, however, been found in absolutely healthy lungs when collapsed. The question is not yet settled.

We may add that in the ordinary removal of serous effusions from the pleura H. Morriston Davies carries out the process by alternately withdrawing a little fluid, and introducing an equal quantity of oxygen at a higher level till the whole of the fluid is removed. He claims that much more fluid can be removed, and that pain shock and the chance of œdema of the lungs is prevented. The slow absorption of the oxygen also causes a better expansion of the lung.

GEORGE PARKER.

SURGERY.

Prostatism is a term used to designate the group of symptoms resulting from a diseased prostate which produces interference with the complete emptying of the bladder, changes in the genito-urinary tract above, and ill-health of the patient. In writing on this subject, Wade[1] points out that supra-pubic prostatectomy for prostatic dysuria is associated with a certain mortality, and sometimes followed by disagreeable complications, so that in many cases the operation is neither safe nor certain.

There is an early period of the disease when these unpleasant sequences are minimised, but a large number of patients—

[1] *Ann. Surg.*, 1914, lix. 321.

particularly those of the hospital class—do not come to operation until considerable damage has occurred to the bladder, ureters and kidneys, and in these cases the danger of operation is by no means negligable. Wade quotes the statistics of various hospitals, and says that according to the published statements of one of the largest hospitals in America, out of 164 cases operated on during ten years 54 died, a mortality of 35.4 per cent. In St. Thomas's Hospital during the five years 1906–10, 69 cases were treated by supra-pubic prostatectomy, of which 14 died, a mortality of 20.3 per cent. He also quotes Page, who says that the mortality after the operation of supra-pubic prostatectomy for adenomatous enlargement of the prostate in St. Bartholomew's, University College, Westminster and Middlesex Hospitals, during the period 1906–10, was 21.5 per cent. Page has collected the cases that were admitted to St. Thomas's Hospital[1] and tabulated them according to the treatment received. The total number of cases was 132, and the mortality 21.7 per cent. Those treated by catheterisation had a mortality of 22.7 per cent., those treated by supra-pubic drainage a mortality of 20 per cent., and those by supra-pubic prostatectomy a mortality of 20.3 per cent. Individual operators can show a much lower mortality than obtains in these general statistics, but Wade considers that the figures quoted of the mortality attending prostatectomy in general hospitals has not shown in recent years that degree of reduction we might have been led to expect.

An analysis of 68 fatal cases goes to show that the commonest cause of death after supra-pubic prostatectomy is septic absorption, arising out of the wound inflicted, and acting upon patients with weakened power of resistance owing to the prolonged disease. The dangers peculiar to supra-pubic prostatectomy are the wounding of the space of Retzius and the consequent risk of septic pelvic cellulitis, pulmonary infection with hypostatic congestion and pneumonia, and the difficulty of efficient drainage of the bladder and prostatic bed so as to prevent septic absorption from the septic stagnant urine that bathes the raw surfaces.

We may consider how far these risks are avoidable by adopting other means of treating the disease, the choice lying between catheter life, preliminary supra-pubic cystotomy and perineal prostatectomy. Catheter life may be dismissed as justifiable only in the inoperable cases. Preliminary supra-pubic cystotomy is performed by some on the grounds that it permits of an improvement in the patient's condition prior to the removal of the growth, and improves the condition of the septic bladder, but Wade thinks the value of it is doubtful.

[1] *St. Thomas's Hosp. Rep.*, 1912, xxxix. 135.

On the other hand, Deaver[1] gives it as his opinion that a two-stage operation, while not ordinarily advisable, may succeed in the case of enfeebled patients with severely infected urinary tracts. The unavoidable risks peculiar to perineal prostatectomy are the greater length of time occupied by the operation and the risk of infection of the pelvic cellular tissue planes, owing to the opening of the lymph paths when the space of Dénonvilliers is opened into. This latter risk is, however, practically avoided by the " packing " which is carried out after operation. Though the supra-pubic route is generally preferred because of its greater ease of performance, Deaver[2] thinks the perineal route is best (1) in cases of carcinoma when lines of cleavage have been obliterated, (2) in tuberculosis of the prostate, (3) in the small sclerotic prostates of chronic prostatitis or fibrous hypertrophy.

The following form the basis of Wade's conclusions on the subject: (1) Three outstanding varieties of disease lead to prostatism — (*a*) prostatic hypertrophy or chronic lobular prostatitis; (*b*) prostatic fibrosis or chronic interstitial prostatitis; (*c*) prostatic carcinoma. (2) The first is by far the commonest cause of prostatism and was present in 82 per cent. of the specimens examined. (3) Chronic lobular prostatitis is a senile hyperplasia, an aberrant growth of tissues that is not the result of the appearance of an independent new growth, but is liable to develop into the same. (4) Chronic lobular prostatitis in the majority of cases produces prostatic hypertrophy. (5) It virtually always develops in the middle lobe, and is almost uniformly confined to the middle and lateral lobes. (6) The gland in consequence undergoes changes that usually permit of its easy removal by supra-pubic prostatectomy. (7) Chronic lobular prostatitis may develop in and be confined to the anterior lobe. (8) Chronic lobular prostatitis may cause prostatism without enlargement of the organ, intravesical herniation or complete false capsule formation. (9) In these cases the performance of supra-pubic prostatectomy is difficult and dangerous. (10) The successful performance of supra-pubic prostatectomy depends on the presence of an advanced type of prostatic hypertrophy due to chronic lobular prostatitis. (11) The clinical recognition of this is frequently very difficult. (12) When a patient with this advanced type of disease is operated on, his urinary tract and general health have usually suffered serious damage from the disease. (13) It is, therefore, unjustifiable to delay operation in an early case of chronic lobular prostatitis in order to permit of the gland undergoing those hypertrophic changes that facilitate its easy removal by supra-pubic prostatectomy. (14) The mortality attending

[1] *Ann. Surg.*, 1914, lix. 360. [2] *Loc. cit.*

supra-pubic prostatectomy is mainly due to the impaired health of the patient prior to operation. (15) The actual cause of death in such cases is usually a local affection arising out of the wound inflicted. (16) The operation of supra-pubic prostatectomy by blind enucleation is unsuitable in cases of prostatism due to other causes than advanced chronic lobular prostatitis. (17) Perineal prostatectomy is a most suitable operation in such cases. (18) Perineal prostatectomy permits of the removal of the disease when its presence is diagnosed in all cases. It is, therefore, at present the operation that offers the best prospect of further advance in the treatment of prostatism. (19) For its successful performance an accurate knowledge of the anatomical structure and relationships of the prostate are necessary, as well as an understanding of the pathology of the disease. (20) The supra-pubic transvesical method of prostatectomy by visual dissection offers the prospect of developing into a method of treating prostatism that may ultimately warrant its adoption in a large number of cases. (21) Chronic interstitial prostatitis is best treated by division and removal of the constriction by the trans-urethral route. (22) Prostatic carcinoma may be in an early case clinically indistinguishable from hypertrophy due to chronic lobular prostatitis. (23) This fact is, therefore, a further reason for operation in all such cases. (24) Prostatic carcinoma when recognised clinically may be successfully treated by excision of the gland in suitable cases.

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The **carotid body** is assuming a position of some importance, and Collison and Mackenty[1] give an account of what is known of this organ or gland in dealing with tumours of the carotid body. The structure is about a quarter of an inch long and an eighth of an inch wide, and is situated in the bifurcation of the carotid artery. Many older observers have supposed that the body is derived from the third or fourth branchial cleft or from the perithelium of the carotid arteries, but the authors of the paper referred to favour the view of Zuckerkandl, Stilling, and others that it belongs to the chromaffin system. Many of the cells of which it is composed stain brown with neutral salts of chromic acid, just as is the case with similar cells found in the medulla of the supra-renals, in the pituitary body and in the ganglia of the sympathetic nervous system. The carotid body may, therefore, be regarded as derived from the cervical sympathetic system.

Little is known of the physiology of the carotid body, and experimental evidence is not in favour of the existence of an

[1] *Ann. Surg.*, 1913, lviii. 740.

important internal secretion, but possibly its function may be connected with trophic stimuli in body development.

Our pathological knowledge of the "body" is limited to tumours, of which about sixty have been reported. The causation of the tumours is obscure. The carotid body is supposed to reach full development between 20 and 30 years of age, and then atrophies or goes on to tumour formation, and thus we find that the greatest number of cases occurs from 20 to 50 years.

These tumours generally have a long history of slow growth, and during this time they have the characteristics of benign neoplasms, being encapsuled and showing no tendency to return if removed, though complete removal is difficult because of their position. Later on they may grow more rapidly and have the characteristics of tumours of slight malignancy, recurrences and metastases may occur, but the cachexia of malignant growth is not present. They have been usually diagnosed as endotheliomata or peritheliomata.

At first the patient complains only of the deformity, but later on there are symptoms of involvement of the cranial and sympathetic nerves, such as cough, dysphagia, or deafness. As the tumour grows more and more structures are involved, the mobility is less, the recurrent laryngeal nerve is paralysed, and the tumour may bulge into the pharynx.

Tumours of the carotid body must be differentiated from lymphadenitis, carcinomatous glands, lymphosarcoma, lipoma, fibroma, aneurism, branchial cysts, gumma, Hodgkin's disease, aberrant thyroid and Bezold's perforation of the mastoid. In many cases a diagnosis can only be made after submitting a portion of the tumour to the microscope.

A diagnosis is rarely made in the early stage, but an operation is attempted under some mistaken diagnosis, and then the true nature of the growth is discovered. The tumour may be dissected away from the bifurcation if it is not closely adherent to the arteries; but if the tumour surrounds the blood-vessels, is closely adherent to the wall, and other structures are included in the growth, then it is unwise to attempt to dissect the mass away, unless the surgeon is prepared to face the risk of removing tumour and arteries together. This involves ligation of the common, internal and external carotid arteries, and probably also of the jugular vein, and the attendant dangers of injuring the pneumogastric, hypoglossal and other nerves. In many of these cases it would be wiser to decline removal of the tumour and close the wound.

JAMES SWAIN.

Reviews of Books.

The Surgery of the Stomach. By HERBERT J. PATERSON, M.A., M.C., M.B. Second Edition. Pp. xix, 342. London: James Nisbet & Co., Limited. 1914. Price, 15s. net.

This useful compendium of modern views of the surgery of the stomach has so quickly reached a second edition that but few words are needed in its praise.

New additions are stereoscopic photographs of the operation of gastro-enterostomy, which in our opinion are inferior to drawings in point of clearness. There are also some plates illustrating the use of X-rays after bismuth feeding, and the chapter on the physiology of gastro-enterostomy has been rewritten. The author holds that the value of gastro-enterostomy is due to its physiological rather than its mechanical effects. He refuses to accept the accumulated evidence of the development of cancer from ulcer, and would advise against the excision of ulcers of the stomach or an exclusion of the pylorus for duodenal ulcers.

Applied Pathology. By JULIUS M. BERNSTEIN, M.B., D.P.H. Pp. xvi, 395. London: University of London Press. [1913.] 10s. 6d. net.

Intended as a survey of the applications of clinical research to practical medicine for busy practitioners and senior students, this book fulfils its object. All technique is omitted save that relating to the collection of material.

The introduction discusses the scope of the clinical pathologist's work and the dangers of inadequate knowledge of clinical medicine and of the patients on the part of pathologists. This draws attention to the separation of the clinician and pathologist so common at present, a state of affairs which brings discredit on much that would otherwise be esteemed. The laboratory tests and products are only links in the chains which curb disease, these must be welded with the results of the clinical investigations if satisfactory results are to be expected. The pathologist and clinician should therefore consult together.

Dr. Bernstein favours relieving the directors of laboratories of the routine work, a very pleasant and tempting proposal. Laboratory attendants are experts at this work, but processes have to be modified often or important points would be missed. Specialised knowledge is required for this, therefore personal

attention to all work is necessary. Routine investigations have necessarily to be left to assistants in "trade laboratories," hence much distrust in this work. Pathologists are often asked why they do not do work quickly at a low figure. An autogenous vaccine, it is said, can be obtained in twenty-four hours from x—— for a couple of shillings or thereabouts, or perhaps the outfit and materials for a Wassermann's test. The reply is, a pathologist does not compete with this work any more than the consultant with an open surgery. In both cases it is likely that where shillings are paid instead of guineas a different class of work is done.

The author shows that most stock vaccines are useless. A vaccine prepared in two days or less must be risky. The organisms cannot be grown, isolated and identified in the time; a shrewd guess may be made, but the result is possibly unsatisfactory. The futility of mutilated Wassermann's reactions is not shown. Only careful selection and titration of all reagents necessitating numerous controls can eliminate errors which render the results valueless. Even if short cuts were reliable, they do not give the degree of fixation of complement necessary for estimating the effect of salvarsan injections. The effect of salvarsan is not constant, one injection may accomplish what several do not in another case. Sometimes the fixation of complement gradually lessens after each injection; the treatment must be continued therefore, but the progress is shown.

Most of the illustrations are good, but figure 9 on page 6 is poor. The book is well proportioned and easy to read. It would take long to show an appreciation of even a portion of what ought to be praised. The portions inviting controversy have therefore been selected instead.

The Medical Annual. Bristol: John Wright & Sons Ltd. 1914. 8s. 6d.

The past year having been one of exceptional activity in all departments of medical science, the thirty-second volume contains about one hundred extra pages. Every effort is made to make the articles as concise as possible, and so keep the volume from growing to an inconvenient size. The cosmopolitan character of the work enables the publishers to obtain the assistance of the leaders of medical thought and research in all parts of the world. The pages of the glossary of new terms will be found useful, and the editor's table contains a vast amount of information on the newest products and devices known to the most advanced scientist. Even that interesting combination of microscope and telescope called the "Davon" patent finds a place. The volume continues to be a *vade mecum*

for the consulting-room table, and has become a necessary part of its equipment.

Renal Diagnosis in Medicine and Surgery. By Dr. VICTOR BLUM. English Translation by WILFRED B. CHRISTOPHERSON. Pp. viii, 144. 1914. 7s. 6d. net.

This is a good translation of an excellent synopsis of the methods of estimating the functional powers of the kidney.

Beginning with the physiology of the renal functious the author shows how the part played by the glomeruli, convoluted and straight tubules has been proved experimentally.

He then considers the various derangements of the above and the resulting incompetence assignable to each.

This is followed by an account of the various modern functional tests by which the power and reserve power of the kidneys can be estimated, as a preliminary to operative procedure.

In the final chapter definite cases illustrate the significance of the findings of functional diagnosis.

A Manual of Surgical Treatment. By Sir WATSON CHEYNE, Bart., C.B., F.R.C.S., and F. F. BURGHARD, M.S., F.R.C.S. New edition, entirely revised, and largely re-written with the assistance of T. P. LEGG, M.S., F.R.C.S., and ARTHUR EDMUNDS, M.S., F.R.C.S. Vol. V. Pp. xxviii, 619. London: Longmans, Green & Co. 1913. Price, 21s. net.

This volume, which completes the revised edition of this manual, deals with the surgical affections of the pancreas, liver, spleen, neck, thyroid, larynx, breast, thorax, lungs, heart, and genito-urinary organs. The question of choice between cholecystectomy and cholecystostomy is left somewhat open, the former being chiefly recommended for cases with diseased gall-bladder and a common duct free from obstruction. In the section on the spleen there is no very clear account of Banti's disease, with the indications as to splenectomy in its various stages. In the treatment of spasmodic torticollis it is not mentioned that usually the posterior cervical nerves to be resected are those on the opposite side to that of the affected sterno-mastoid.

The surgical treatment of exophthalmic goitre is put forward, and its indications discussed in a clear manner.

In cancer of the breast much importance is attached to a wide removal of skin, and the incision is to be planned according to the situation of the tumour in the breast.

In the surgery of the thorax full illustrated descriptions are given of the various differential pressure chambers, but it is unfortunate that in mentioning the intratracheal anæsthesia as a substitute for these, the least efficient apparatus for this purpose is mentioned, viz. Boyle's, in which the foot bellows never gives a constant pressure.

In diseases of the prostate the perineal route for removal of the gland is said to be indicated in the fibrous and hard conditions of the gland.

There is a very good account of the operative treatment of ectopia vesicæ, the trigone being implanted into the pelvic colon.

A chapter on the modern methods of cystoscopy, pyelography and estimation of the functional conditions of the kidneys is written by Thomson Walker, and is a valuable addition to the work.

In the article on nephropexy is included a good account of the anterior operation which is recommended because of the accuracy with which stitching can be done, and the facility that is afforded by the anterior incision of making exploration of the abdomen.

The authors of this work may be congratulated on the revised edition, which once more makes this the standard English work on surgical treatment.

Modern Problems in Psychiatry. By ERNESTO LUGARO. Translated by DAVID ORR, M.D., and R. G. ROWS, M.D. Pp. vii, 305. Manchester: At the University Press. 1913. Price, 7s. 6d. net.

We must at the outset commend the admirable translation by Drs. Orr and Rows. To them we owe an eminently clear and polished version of a most valuable work. Lugaro has in this second edition laid under review all reliable research work up to date. That he has been able to compress, without evidence of undue brevity so large a bulk of material within such reasonable limits, is owing to his powers of complete assimilation and comprehension, to the filtration to essentials accomplished by a mind clear, critical and unbiassed. His statements, indeed, may be absorbed by the reader with little hesitation: they have passed through an exceptionally keen scrutiny before presentment. After the perusal of this work one may feel that reproach can no longer be cast on psychiatry as a laggard branch of medicine. It is evident, although but the fringe of the fabric be shown, that considerable and reliable additions to the structure have been made of late years. To none more than the author does credit belong for such advances, and though

Lugaro is ruthless in exhibiting the shortcomings in our knowledge, his candour is the more justifiable by reason of the realisation of firmer ground and the obvious need for filling up the now recognisable voids. At the same time, he is full of hope and of suggestions of fruitful kind for the lines of future investigations. Any detailed notice of this book is rendered superfluous by the clear and appreciative summary contained in the Foreword by Sir Thomas Clouston; its main features, too, have received allusion in the notice of the first edition. It is to be recommended with confidence to the general physician and neurologist as well as to the alienist. To the latter it is indispensable should he desire to keep abreast of recent research. It is rare that such a summary of the world's work can be presented in so assimilable and impeccable a form, and with such a blending of original investigation and valuable comment.

Mental Diseases. By R. H. COLE, M.D. Pp. x, 343. London: University of London Press. 1913. Price 10s. 6d. net.

If there be one branch of medicine which does not lend itself, after the mode of the late Pelissier, to "potting," it is that of mental diseases. Should, as in the present case, the object be to give the medical student and general practitioner such a sufficient knowledge of the subject as the many other claims on their time for study allows, the plan preferably to be pursued is that of affording a general and equable survey, neither curt nor discursive, avoiding minutiæ where possible on the one hand, and superficial or scant treatment of any parts on the other. The most ineffective purpose for this class of readers is that of attempting in a short work to embrace all obtainable details and to indicate every current speculation. This can only be done by sacrificing literary style, and projecting bald statements at the unfortunate reader as with a pea-shooter. Many works on insanity have faults of one kind or another, not seldom a want of evidence as to any reason for having been written at all. We do not, however, recall any book previous to this whose author has so failed to realise that such a difficult subject is only to be presented by one who, having absorbed the contents of his pigeon-holes, is able to transmute them into a product the details of which are harmoniously connected, imaginatively treated, graphically illustrated, and decked with some show of literary polish. The reader needs to be guided from one statement to another, his attention to be courted, his reflection stimulated, his patience neither exhausted by excessive minutiæ nor tempted to flag by obvious superficiality. This book conveys to us nothing of an author's art. It reads merely as a slight amplification of the contents of a

note-book fully stocked with abstracts of current literature. Of the author's views or investigations we find nothing, there is no personal note from beginning to end. As a result of this method of presentation we opine that, although in the way of information to the reader Dr. Cole has been punctilious in leaving nothing out, we are doubtful whether he has been so successful in putting anything in.

To instance the author's "conciseness" let us take the paragraph on obsessive ideas. We find these described as "generally due to emotional stress, with defective volition." The subject is dismissed in less than five lines. At page 44, on the origin of delusions, we read: "The retardation of ideas and painful emotion in depression produce a splitting-off of certain ideational complexes from the general personality." Original or quoted, this is pretty strong meat for psychological babes! As a specimen of the spasmodic, jerky style of writing throughout the book, take the section on the Etiology of G.P. Here are twenty-five statements, separated by full stops, in sixty-nine lines. A little later another paragraph contains fourteen statements in thirty-six lines. The effect of this piecemeal method of writing is fatiguing to the last degree.

The book seems to us to present possibilities of use to the Asylum Medical Officer as an index or work of brief reference. Were its other qualities at all proportionate to the careful completeness of its compilation it would be a good book.

Ionic Medication. By H. LEWIS JONES, M.D. Pp. viii, 151. London: H. K. Lewis. 1913. Price 5s. net.—Those of our readers who remember Dr. Lewis Jones' excellent address on "Treatment by Cataphoresis," given a few years ago before the Bristol Medico-Chirurgical Society, will welcome the appearance of this little book. It contains a short discussion on the physics of ionisation, as well as complete directions for the administration of remedies by this means. The various kinds of ions available for therapeutic use are described in detail, and the maladies in which benefit may be expected are set forth at length. The book is essentially one to be recommended to the general practitioner. It will add materially to his resources in the treatment of painful and obstinate cases of many sorts.

A Manual of Medical Treatment, or Clinical Therapeutics. By I. BURNEY YEO, M.D. Fifth Edition. By RAYMOND CRAWFURD, M.A., M.D., and E. FARQUHAR BUZZARD, M.A., M.D. Two volumes. Pp. xv, 834; vii, 846. London: Cassell & Co. Ltd. 1913. Price 25s.—Previous editions of this work were reviewed in Vols xii, xx and xxvii. It has now undergone most careful revision and some little enlargement, necessitated by a

notice of new therapeutic methods and an amplification of the index. The advances made in the domain of vaccine therapy, the use of the X-rays in diagnosis, and the serviceability of various physical methods of treatment have received careful consideration. Selections of formulæ are still added and mostly without abbreviation, as in these days of ready-made combinations and proprietary remedies such formulæ have a decided educational value. The sections on nerve diseases have been revised by Dr. Farquhar Buzzard, and all the remaining sections by Dr. Raymond Crawfurd. The new and revised form of the book must enable it to maintain and enhance that reputation which it has so deservedly obtained in the past.

Physics. By C. G. KNOTT, D.Sc., F.R.S.E. Third Edition. Pp. 292, 370. London: W. & R. Chambers Limited. 1913. Price 7s. 6d.—The author has revised and amplified the previous edition of this book in the light of recent research, introducing a chapter on radio-activity and bringing the electron theory more into prominence. This has naturally lead to an increase in size. The book in its present form is an admirable text-book for the student who intends to proceed to an advanced course in Physics, but one is inclined to think that the six hundred and forty odd pages which it contains embrace more of Physics than the average medical student in his first year may reasonably be expected to assimilate. The general arrangement is good, and most of the diagrams are clear, but exception must be taken to several in Chapter xi, notably those on page 150, which convey quite an erroneous idea of the character of electric discharge. There are tables of optical constants at the end, but the general character of the book would lead one to look for data of more use to the elementary student than values for the refractive indices of various substances to five or six figures. Answers are given to the numerical examples, and the book is well indexed.

Weitere Beiträge zur Behandlung der Nephritis und verwandter Erscheinungen. Von MARTIN H. FISCHER. Cincinnati. **Sonderabdruck aus Kolloidchemische Beihefte.** Band IV. Pp. 70. Dresden and Leipzig: Verlag v. Theodor Steinkopff. 1913.—In former papers the author has endeavoured to show that the symptoms of nephritis are due to colloido-chemical changes, which result in an abnormal production and accumulation of acid in the kidneys. Albuminuria is attributed to solution of kidney-colloids, the presence of casts to solution of binding material between parenchymatous cells and connective tissue by the acid, and the enlargement and alteration in colour of the kidneys to the same cause. The general symptoms of nephritis, *e.g.* anuria, anasarca, œdema, retinal changes, convulsions, etc., are attributed to accumulations of acid in the affected organs,

increasing the affinity for water of the tissue colloids. The so-called complications of nephritis are not consequences of the kidney disease, but evidence of the simultaneous presence in other organs of the same changes that in the kidney are called nephritis. The object of treatment is to combat the accumulation and over-production of acid. In mild cases this is done by the administration of hourly doses of sodium carbonate 0.5 to 1 grm. in water. If the patient cannot take this or does not speedily show improvement, rectal injections of sodium carbonate and chloride in distilled water are substituted; whilst in severe cases with urgent symptoms recourse is had to intravenous injection of the same salts in 1 to 2 litres of partly distilled water. The author gives a number of cases illustrating the (mostly) successful results of this treatment, which has also been successful in acute glaucoma.

Guide to the Microscopic Examination of the Eye. By Professor R. GREEFF, with the co-operation of Professors STOCK and WINTERSTEINER. Translated from the third German Edition by HUGH WALKER, M.A., M.B., C.M. Pp. xvi, 86. London: The Ophthalmoscope Press. Price 7s. 6d. net. This is a conveniently-arranged handbook for those who are doing microscopical examination of eyes. There is a good index, and the methods are given clearly and in detail. A short account of the commoner bacteria is appended. The major part of the contents is to be found in the general books upon the subject, but there are a few "special" hints which justify the issue of another publication.

Department of Neurology. Harvard Medical School. Vol. V 1912. Boston, U.S.A.—This volume of reprints of papers by the neurologists of the Harvard Medical School, collected from various journals, maintains the high standard of its predecessors. We recommend its perusal to all students of neurology. The frontispiece is a portrait of Professor James Jackson Putnam, who retired from active service at the end of 1912, after being engaged in the teaching of neurology since 1872. Dr. Putnam has for years been one of the most distinguished members of the great neurological fraternity of the United States. That his activities have not ceased is shown by the fact that he contributes no less than eight papers to the present volume, dealing with the psychoneuroses and Freud's method of psycho-analysis. The volume contains many other papers of interest and value.

A Guide to the Mental Deficiency Act, 1913. By JOHN WORMALD and SAMUEL WORMALD. Pp. x, 145. London: P. S. King & Son. 1913. Price 5s. net.—As this Act came into force on April 1st, 1914, and will revolutionise the status of the feeble-minded, both children and adults, it will be

necessary for every medical practitioner to be conversant with its provisions. The Act is a far-reaching one, and should in time enable the problem of the feeble-minded, one of the most urgent and pressing social problems of our time, to be met. This Act is the first attempt to deal with the feeble-minded population in an adequate and scientific way, to prevent their unchecked increase, and to guard them from the commission of crime and from exploitation by evil-disposed persons. The book under notice comprises an introduction dealing with the preliminary stages of the passing of the Act of 1913, the authors' commentaries upon and explanations of its provisions, an appendix giving the full text of the measure, and an index. The explanations are given in a lucid manner, and the authors make numerous suggestions as to the way in which the powers given under the Act can be most fully utilised. We think that our readers will find this little work a useful guide, but with regard to the index, we would suggest that it should also give direct references to the Act itself, and not only as at present to the authors' explanatory text.

Geburtshilfliches Vademekum für Studierende und Aerzte. Von Prof. Dr. A. DÜHRSSEN. Zehnte auflage. Pp. xii, 308. Berlin : S. Karger. 1913.—The fact that this book has reached its tenth edition testifies to its popularity, and a perusal of it shows that this appreciation is well merited. The author's object of providing a vade mecum is kept in view throughout, and in the account of the physiology and pathology of labour stress is laid only on those points which are of practical importance, other matters of more theoretical interest being touched upon just enough to give the reader an intelligent view of the subject. In the section on treatment the teaching is clear and dogmatic, and embodies the methods practised in the author's clinic. In a book like the present one this is as it should be ; for discussion and comparison of alternative methods the reader can go to larger text-books. We note that in the treatment of eclampsia the author strongly recommends emptying of the uterus, and praises but faintly the use of morphia for control of the fits. For placenta prævia he gives version the preference over the use of the Champetier de Ribes' bag, and in postpartum hemorrhage he is an advocate of early packing of the uterus, and not of keeping this proceeding as a last resource for extreme cases only. There is an excellent section on the causes of sudden death in connection with labour and the puerperium. The poorest parts of the book are the illustrations, which are scanty, and executed after the manner of text-books of years ago. That is a minor point, however, in a work of this kind, and in no way hinders its recommendation to students and practitioners as a most useful practical guide in the conduct of normal or difficult labour.

Explanatory Lectures for Nurses and their Teachers. By H. HAWKINS-DEMPSTER. Pp. xi, 224. Bristol: John Wright and Sons Ltd. 1913. Price 3s. 6d. net.—This volume consists of a series of lectures on nursing subjects, selected more or less at random. They are addressed to those in training for first aid certificates and as cottage nurses and the like. The subject-matter is very largely theoretical, and the style not very readable. The information given, however, is very accurate, although the statement that all micro-organisms are certainly killed by a temperature at freezing-point is open to criticism. However, the would-be cottage nurse can glean a great deal of useful information from the book, for which the price asked is certainly most reasonable.

Cunningham's Manual of Practical Anatomy. Revised and edited by ARTHUR ROBINSON. Sixth edition. Vol. I. Pp. xxx, 673. Edinburgh, Glasgow and London: Henry Frowde and Hodder & Stoughton. 1914. Price, 10s. 6d. net.—It is but eight years since the first edition of this well-known manual of anatomy appeared, and now the sixth edition is before us. Such a record speaks for itself, showing that the book has gained great popularity. In our opinion the popularity it enjoys is well deserved and will be maintained. For the present edition the whole of the text has been revised, new figures introduced, and a series of radiographs of joints and other organs appended.

A Companion to Manuals of Practical Anatomy. By E. B. JAMIESON, M.D. Pp. vii, 543. London: Henry Frowde and Hodder & Stoughton. 1913. Price, 6s. net.—This little book will be found useful to a student revising anatomy. Although of pocket size, by judicious condensing it contains all the essentials of the text-book in its 540 pages. It is also intended for use as a dissector's guide, an account being given of the relations in the more important regions, and, what we consider an important innovation, the various structures are dealt with under their systems, so that the student may realise that the structures engaging his attention are found also in other parts of the body. In fact, this work combines in one neat little volume the text-book and dissecting manual. It is matter for regret, however, that the Basle nomenclature has been adopted, although the older terms are in most cases inserted in brackets after the new. We hope also that in a future edition more attention will be given to surface-markings. Much credit is due to the author for the very careful editing to which he has subjected his work.

The Early Diagnosis of Tubercle. By CLIVE RIVIÈRE, M.D. Pp. x, 260. London: Oxford Medical Publications. 1914. Price, 6s. net.—We hold with the author that "the skill

required for the early diagnosis of tubercle is, unfortunately, difficult and laborious to acquire, and no short cut to it does, or ever can, exist—the path of experience must be duly trod. The way can, nevertheless, be greatly smoothed by a careful piecing together of the scattered stones of knowledge over which the journey lies, and this has been attempted in the present book." It is divided into two sections: Part I—Adults, the diagnosis of pulmonary tuberculosis of adults, phthisis; and Part II—Children, tuberculosis of thoracic glands, hilus tuberculosis. The author starts with the statement, which cannot be denied, that "the first beginnings are generally overlooked, or are passed over as a febricula, or are labelled influenza, and subside again without arousing suspicion, hence it has nearly always reached a diagnosable stage by the time the physician is called in." The skill required for such early diagnosis is greatly dependent on certain special and laboratory tests which in themselves are often misleading; but we cannot dispense with the older methods of physical examination, and these must be aided by certain modern methods which require much time and prolonged training. But in nearly all our signs and tests the absolute is wanting, and the evidence from all sources has to be dealt with in a judicial spirit. The book presents fully the points whereby an accurate technique in the various methods may be acquired. Some 170 pages are occupied in the details of clinical diagnosis and the special diagnostic tests, and the student cannot fail to see how much he has to learn, and the older practitioner how much he has failed to learn, in the diagnosis of phthisis from this modern standpoint. As regards Part II, the author occupies some sixty pages on the clinical diagnosis and special diagnostic tests relating to hilus tuberculosis in children. There is much new matter here requiring careful study. A copious bibliography of over ten pages adds greatly to the value of the volume, on which we cannot do otherwise than congratulate the author, and of which he may well be proud. Without a careful study of this book no one can claim to be well versed in all the details of diagnosis of tuberculous diseases a subject in which modern workers have made such great advances during the last few years. The author has done a great deal towards the advancement of his speciality, and his work should do much towards the extinction of many fallacies and errors in the diagnosis of tuberculous diseases.

Plain Rules for the Use of Tuberculin. By R. ALLAN BENNETT, M.B.Lond. Pp. 48. Bristol: John Wright & Sons Ltd. 1914. Price, 2s. 6d. net.—The interest of this booklet is derived from the fact that it is written by one of our tuberculosis officers, in charge of the Devon County Council Tuberculosis

Dispensary, Torquay, and who was formerly R.M.O. to the Manchester Hospital for Consumption and Diseases of the Chest. It is intended as a guide to those who are working out for themselves the problems of tuberculin treatment. The author again emphasises the possibilities of errors in diagnosis of the disease, and of the so-called specific reactions as tests, and he goes on to illustrate the effects of tuberculin as it can be given to ordinary working-class patients at a dispensary. He contrasts the extravagant claims which are made for tuberculin from time to time with the views of those who hold that it is still on its trial in pulmonary tuberculosis, and he claims for it that it is one of the best weapons we have in the campaign against tuberculosis. He prefers the bovine tuberculin as a rule, and finds few cases which cannot be helped by its use. He appears to proceed with caution. He considers a temperature of 99.4 to be an absolute bar to its use, and he discontinues it in persons who are not capable of response. He holds that tuberculin treatment plus sanatorium must be immeasurably superior to tuberculin alone. These are views which commend themselves, and the book cannot fail to be a simple and reliable companion to the early worker on tuberculin in phthisis.

A Synopsis of Surgery. By ERNEST W. HEY GROVES, M.A., M.D., B.Sc. Lond., F.R.C.S. Eng. Fourth edition. Pp. x, 599. Bristol: John Wright & Sons Ltd., 1914. Price, 9s. 6d. net.—When a book reaches its fourth edition it is obvious that it meets with approval and has justified its existence. The present edition has been carefully revised, and sections on recent theories of shock, spinal cord tumours, resection of nerve roots and other subjects have been added. The most important new feature is the handing over of the pathological and bacteriological sections to Dr. George Scott Williamson, the Pathologist to the Bristol General Hospital. The information given is clear and accurate, and the most modern ideas have been incorporated. There is an excellent index, which is most helpful in a work of this kind. Cohnheim is spelt Conheim both in the index and body of the book.

Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Authors and subjects. Second Series, Vol. xviii. Pp. 1,057. "Tetamore - Tzschirner." Washington. 1913.—The volume includes 3,865 author titles, representing 4,117 volumes and 2,693 pamphlets. It also contains 5223 subject-titles of separate books and pamphlets, and 45,525 titles of articles in periodicals. These figures are so large, that it is better to refer to one or two headings in order to show more clearly the great utility of this work, which places the profession under a great debt to the collaborators. Under the heading "Tuberculosis" we have more than 110 pages of

closely-printed references, the subject being divided under innumerable headings. More than sixty pages are similarly devoted to "Tumours"; thirty-five pages are occupied by references to thyroid glands and allied subjects, and thirty-eight to tetanus. The mention of these titles is sufficient to show how vast the literature has become, and how impossible it would be for writers on such subjects to deal efficiently with the matter without the help of such a praiseworthy and carefully-prepared work of reference.

The Road to a Healthy Old Age. Essays Lay and Medical. By THOS. BODLEY SCOTT. Pp. 104. London: H. K. Lewis. 1914. Price 3s. 6d. net.—The title is a very captious one, and the author has no doubt contributed by his judicious treatments to the comfort and welfare of many of his patients, and has thereby justly earned their esteem and good will. But after careful perusal of the work, the question arises, do these sufferers from high tension and pulmonary and cardiac complaints ever live to very advanced ages? We have in our mind individuals (and could number many if space allowed) to whom high tension remedies are unknown by any real personal experience, and the only vaccine known that of infancy, and not of necessity even this. These people are very much a class to themselves, and by no means necessarily an hereditary one, for who can disentangle the skein of marriage? But even this class should not and cannot continue taking undue liberties with their constitution; they must live fairly straight and sober lives, and be active advocates for plenty of exercise, cold or tepid baths, and a mild system of gymnastics suited to their capabilities. We can speak with very little experience of the hippurates (p. 53–4), but we notice they have been given in combination with other heart tonics, and our own best results, with iodide of potassium, in arterio-sclerosis, have been with smaller doses, two, three, and rarely four gr. doses. Specialism is rather condemned on page 2, but rather exalted on page 84–5, where the author's son is being introduced on the stage of "vaccines."

Dental Diseases in Relation to Public Health. By J. SIM WALLACE, D.Sc., M.D., L.D.S. Pp. viii, 90. London: *The Dental Record*, 1914. Price 3s. net.—A book that should be read by every medical practitioner and student. The advice about food and feeding is particularly good, and if followed would save an enormous amount of dental disease; but sufficient stress has not been laid on the use of the tooth brush and silk after meals.

Editorial Notes.

Geheimrat Professor Killian at the Royal Infirmary.

SUSPENSION laryngoscopy marks a new era in laryngology and a further development of the methods of direct laryngoscopy, tracheoscopy and bronchoscopy which we owe to the genius of Killian, and which opened up regions for treatment that heretofore had been practically inaccessible. Inspection of growths, ulcers, and other pathological conditions and their treatment, and also the removal of foreign bodies even from the bronchi of the second division, have become almost familiar and commonplace in special throat clinics by means of Killian's tubes, or the improved patterns of Brünings and Chevalier Jackson. But the use of these tubes involves monoptic vision, and the engagement of one hand in holding the instrument, and therefore in laryngeal conditions, at any rate, suspension laryngoscopy—which exposes to view the larynx and trachea by using the weight of the patient's head to retract the base of the tongue and epiglottis by means of a specially constructed spatula, and thus leaves both the operator's hands free, and at the same time gives an uninterrupted view of the whole larynx, and of the pharynx and hypo-pharynx—is, from a practical standpoint, the opening up of a new field in laryngology. Professor Killian was appointed to the Semon Lectureship at the London University this year, taking as the subject his method of suspension laryngoscopy. It was a privilege to have a demonstration of the latest developments of this method at the Bristol Royal Infirmary, although suspension laryngoscopy had already been employed there for the removal of growths, etc. A number of the Honorary

Medical Staffs of the Royal Infirmary and General Hospital, as well as the Vice-Chancellor of the University of Bristol and laryngologists from Bath and Exeter, received their distinguished colleague in the throat department of the Royal Infirmary. It is interesting to hear from Prof. Killian how he came to think of the method, for it was due to his requiring an artist to make coloured drawings of the larynx, etc., as seen through the direct laryngoscopic lamp in the cadaver. He found that it was too trying to support the lamp and tube *in situ* for a sufficient length of time for the artist to work, and therefore supported the larynx with a spatula, by means of a hook depending from a clamp on the dissecting room table, the head of the subject hanging in the supine position over the end of the table. Then it was that the new and more complete view of the regions of the larynx appeared to him so much more perfect than that obtained in the usual way through the tube spatula, that it occurred to the Professor that the same enlarged view would be equally well obtained in the living patient. Once the possibilities that lay in such a method had occurred to him, Professor Killian worked incessantly to devise and to improve the technique, and the instruments that had to be constructed, with the result that he has given to laryngology another epoch-making advance.

Although we were thus enabled to profit by the presence of the inventor to witness suspension laryngoscopy under the best auspices, the primary object of his visit to the Royal Infirmary was to see for himself the newer methods there employed for operating intranasally for frontal sinusitis; and after witnessing this operation on a case with left frontal sinus and double antral suppuration, he inspected a number of others in whom the same operation had previously been done. As the most widely-practised external operation for frontal sinus suppuration is that introduced by Professor

Killian some years ago, he was particularly interested in the newer intranasal methods.

* * * * *

Winsley Sanatorium for Consumption.

THE Ninth Annual Meeting of this Institution was held on May the ninth, at the Sanatorium, the President, Dr. Shingleton Smith, in the chair. We cannot congratulate the Board of Management on the way they are conducting the medical side of the work, that is the most essential and important side, and when the President felt called upon to make a public criticism of his managing board, it may be assumed firstly that the grounds for complaint are exceptionally strong and well-founded, and secondly that the criticisms uttered were the least he could say consistent with the duty his high and responsible position imposes, and that on a less public occasion he might have said a good deal more. As it is, we note that the Annual Report contains no report from the Medical Consultative Board! The reason is that no report was invited, and no one who is conversant with the way the Medical Consultative Board's previous reports and recommendations have been treated by the lay committee could wonder if the medical men who constitute the Medical Consultative Board do not care to "turn the other cheek." When we recall the fact that the movement for the better control and treatment of the poor consumptive was initiated by medical men in Bristol and the Counties of Gloucester, Wilts and Somerset, that the first official committee was organised by the Bristol Medico-Chirurgical Society, that their efforts culminated in the building and equipping of the Sanatorium, that they directed the work in its inception, and that they taught the various lay bodies and Municipal Corporations how this Sanatorium should be worked, it is a matter for surprise

that the lay members of the Committee should feel that they can ignore the medical guidance of their own Medical Board in medical matters. The Winsley Sanatorium Management quite recently had to face the resignation of a capable Resident Medical Officer, on the ground that it was difficult to carry on the medical work of the institution satisfactorily ; firstly, because he was hampered in the control of the Institution, and secondly because the number of patients and the inadequacy of trained assistants rendered impossible that individual care and attention which is the essence of modern sanatorium methods.

Hitherto we find that one resident medical officer has had something like one hundred patients to supervise and to treat, and that the position accorded to him is by no means that of appertaining to a medical superintendent. The members of the House Committee and Board of Management deserve thanks for devoting much time and energy to the interests of the institution, and it is perhaps too much to expect the layman to realise fully how the morale of the institution depends on the personal factor of the medical superintendent, or how much this is as an essential element in the successful treatment as are the purely therapeutic methods employed. As it is, the Winsley Sanatorium partakes more of the character of an expensive convalescent home than an up-to-date scientific sanatorium for consumption.

We note that on the occasion of this annual meeting, as on previous occasions, a representative of the Bristol Corporation makes much of the fact that the Sanatorium had a large debt when it was built and equipped, and that the various public bodies which secured and paid for beds had discharged the debt. On the other hand, it may be pointed out that the institution could have been sold, and the financial soundness of the venture proved, had not the original committee preferred the sensible course of inducing

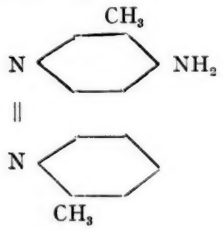
the Municipal Corporations to meet their responsibilities to the poor consumptive of the cities by finding beds for them in a well-equipped sanatorium, and no doubt the representatives of the ratepayers were well assured that the money they thus invested was being well spent. As it is, the Corporations have obtained control of over twenty thousand pounds sunk in the institution by private donors, and the representatives of those donors have been so reduced that they have no effective voice whatever in the control of the institution that the private donors initiated and equipped. The ratepayers, represented by the Corporation, can hardly be indifferent to any waste of public money from lack of reasonable efficiency, and the State, from which now a large proportion of the funds for maintenance are derived, is not likely to acquiesce in the expenditure of enormous sums from the public purse unless the management places itself beyond the criticism of independent authority, much less its own Medical President, whose name has been so long associated with the treatment of consumption, or of its Medical Consultative Board, which comprises experts in tuberculosis. Now that the State provides such a large proportion of the cost of maintenance, it is to be hoped that the Local Government Board and the Charity Commissioners will see to it that the work is of the highest order, so that the results of the Winsley Sanatorium may be accepted as an indication of what may be accomplished by sanatorium methods properly carried out.

Therapeutic Notes.

CELL PROLIFERANTS.

SINCE 1908 several substances have been employed to promote the growth of epithelium on granulating surfaces and open

wounds. They are all closely related chemically, and have many properties in common. They are insoluble in water, but more or less soluble in oils and fats, and are usually employed in 8 per cent. dilutions in oil, lanoline or vaseline. They are all red in colour and some are true dye stuffs. The simplest chemically is amido-azo-toluol :—



It is said to have a more energetic action than the original scarlet red.

The amido group (NH_2) contains two hydrogens capable of replacement by other radicles ; thus if acetyl (CH_3CO) replaces one hydrogen, a light yellowish red substance is produced, to which the trade name of *Azodermin* has been given. It is not so soluble in oils as scarlet red or amido-azo-toluol, and is only with difficulty dissolved in ether. When both the amido hydrogen atoms are replaced by acetyl a similar body is produced, which not being a true dye does not produce permanent stains on the skin or linen. It is known by the trade name of *Pellidol*. It is very soluble in oils and fats, and thus ointments prepared from it have none of the grittiness which is found with scarlet red. *Azodolen* is a mixture of equal parts of Pellidol and an organic iodine compound. Pellidol being very soluble may be employed in lower dilutions, such as 2 per. cent. The addition of the iodine compound is thought to render preliminary antiseptic applications unnecessary.

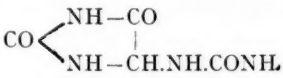
Scarlet red itself is the most complicated chemically of the series, as here the two hydrogens are replaced by a group called azo-β-naphthol, $NC_{10}H_6OH$. The solutions in oil are partly suspensions, which prevents them from being quite smooth in

consistence. It may be conveniently prepared according to Bruhn's formula, which consists of 5 to 10 per cent. of the drug in equal parts of lanoline and paraffin ointment. These preparations being all more or less irritant, are best used for one or two days only, and then replaced for a similar period by boracic ointment. A careful cleaning of the surface with iodine or peroxide of hydrogen is also necessary, as they do not act well on discharging or septic wounds.

Injections of scarlet red dissolved in oil have been found to stimulate the growth of carcinoma in mice; the theory of its action appears to be that it is really cytotoxic,and that it is the products of cell disintegration which stimulate other cells to proliferate. In rabbits injections into the site of severe X-ray burns have caused necrosis and sloughing, but in slighter burns epithelial proliferation has resulted.

Two cases of poisoning have been reported which were distinctly alarming though not fatal. The symptoms were dizziness, pain in the stomach, nausea and vomiting.

Another substance, belonging to a different chemical group, which has been credited with similar properties is Allantoin:—



It is thought to be connected in some way with growth and cell proliferation both in plants and animals; in man it is apparently passed through the body unchanged, and the small amounts recovered from normal urine are probably derived from food. In some animals it appears to be a normal metabolic product.

It is certainly remarkable that both this substance and the scarlet red series should contain somewhat similar nitrogen groupings. Azodermin and Pellidol also contain CO groups. Allantoin is used in 0.3 to 0.4 watery solution as a dressing for ulcers and wounds. It occurs in the plant called comfrey, which has an ancient reputation as a healing application.

J. M. FORTESCUE-BRICKDALE.

The Library of the Bristol Medico-Chirurgical Society.

The following donations have been received since the publication of the list in March.

May 30th, 1914.

L. M. Griffiths (1) .. .. 27 volumes.
Mr. E. W. Hey Groves (8) .. .. .. 1 volume.
Dr. R. G. Poole Lansdown (2) .. .. .. 120 volumes
Editor of *The Medical Officer* (3) .. .. .. 2 ,,
New York Surgical Society (4) .. .. .. 1 volume.
Dr. R. Shingleton Smith (5) .. .. .. 1 ,,
The Surgeon-General, United States Army (6) .. 1 ,,
J. Wright & Sons Ltd. (7) .. .. .. 2 volumes.

A framed picture has been presented by Mr. Paul Bush.

NINETY-SECOND LIST OF BOOKS.

The titles of books mentioned in previous lists are not repeated.

The figures in brackets refer to the figures after the names of the donors, and show by whom the volumes were presented. The books to which no such figures are attached have either been bought from the Library Fund, or received through the *Journal*.

Adler, De F. Willard and L. H. *Anæsthesia* .. .. (2) 1891
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Cooper, B. B. .. *Life of Sir Astley Cooper, Bart.* 2 vols. (7) 1843
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Erichsen, J. E. .. *Surgery.* 2 vols. .. .. (2) 10th Ed. 1895
Galton F. .. .. *Finger Prints* .. .. (2) 1892
Gray, H. .. .. .. *Anatomy* .. .. (2) 10th Ed. 1883

Hartenberg, P. ..	*Neurasthenia* (Trans. by E. Playfair)		1914
Hartshorne, H. ..	*Essentials of Medicine*	(1) 5th Ed.	1881
Heath, C.	*Bandaging*	(2) 11th Ed.	1897
Hilton, J.	*Rest and Pain*	(2) 2nd Ed.	1877
Holden, L.	*Landmarks*	(2) 4th Ed.	1838
Howard, R.	*The Practice of Surgery*		1914
Husband, H. A. ..	*Forensic Medicine*	(2) 5th Ed.	1839
Husband, H. A. ..	*The Student's Pocket Prescriber* ..	4th Ed.	1914
Jansen, M.	*Achondroplasia*		1912
Kaposi, M.	*Diseases of the Skin*	(2)	1895
Keith, A.	*Human Embryology*	(2)	1902
Kocher, T.	*Operative Surgery*	(2)	1894
Leaf, C. H.	*Clinical Causes of Cancer of the Breast* ..	(2)	1904
M'Lachlan, J. ..	*Applied Anatomy.* 2 vols. ..	(2) 3rd Ed.	1889
Macmunn, C. A. ..	*Spectrum Analysis*		1914
Mercier, C. A. ..	*Astrology in Medicine*		1914
Michels, R.	*Sexual Ethics*		1914
Murray, R. W. ..	*Hare-lip and Cleft Palate*	(2)	1902
Napheys, G. H. ..	*Medical Therapeutics*	(1) 7th Ed.	1880
Nash, E. H. T. ..	*School Lighting*		1914
Nettleship, E. ..	*Diseases of the Eye*	(2) 4th Ed.	1887
Nisbet, W.	*The Clinical Guide.* 4 vols.	(1)	1799–1800
Owen, E.	*Appendicitis*		1914
Paterson, H. J. ..	*Hunterian Lectures on Gastric Surgery* ..	(2)	1906
Paterson, H. J. ..	*The Surgery of the Stomach*	New Ed.	1914
Ross, E. H.	*The Reduction of Domestic Flies*	(5)	1913
Sandow, E.	*Strength and how to obtain it*	(2)	[N.D.]
Sharpe, J. B. ..	*A Manual of Percussion and Auscultation*	(1)	1832
Silk, J. F. W. ..	*Modern Anæsthetics*		1914
Southam, F. A. ..	*Regional Surgery.* Parts II, III ..	(2)	1884–86
Spiritual Healing.	.. ..		1914
Sturge, R. F. ..	*Thirty Years' Weather at Bristol*, 1860–89	(1)	1890
Sturge, R. F. ..	*The Weather at Clifton from* 1890 *to* 1900	(1)	1901
Thomson, J. A. ..	*Outlines of Zoology*	6th Ed.	1914
Treves, F.	*System of Surgery.* 2 vols.	(2)	1895
Wilks, S.	*Lectures on the Specific Fevers*	(2)	1873–74
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Wilson, G.	*Handbook of Hygiene*	(2) 6th Ed.	1886
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American Association of Genito-Urinary Surgeons, Transactions of the	Vol. VIII	1913
American Journal of Ophthalmology	Vol. XXX	1913
American Journal of the Medical Sciences	Vol. CXLVI	1913
American Journal of Surgery	Vol. XXVII	1913

American Medicine	N.S., Vol. VIII	1913
American Pediatric Society, Transactions of the	Vol. XXV	1913
Annales de Dermatologie	Bd. IV	1913
Annals of Tropical Medicine	Vol. VI	1912
Archiv für Klinische Chirurgie	Bd. CII	1913
British Journal of Dermatology, The	Vol. XXV	1913
British Journal of Surgery, The	Vol. I	1913–14
Bulletin de l'Académie de Médecine	Tom. LXIX, LXX	1913
Canadian Medical Association Journal, The	Vol. III	1913
Clinical Journal, The	Vol. XLII	1913
Deutsche Zeitschrift für Chirurgie	Bd. CXXV	1913
Edinburgh Medical Journal	N.S., Vol. XI	1913
English Catalogue of Books, The		1913
Gazette des Hopitaux		1913
Gazette hebdomadaire des Sciences médicales de Bordeaux		1913
Hospital—St. Bartholomew's Hospital Reports	Vol. XLIX	1914
Hospitals and Charities, Burdett's		1914
Indian Medical Gazette, The	Vol. XLVII	1912
International Abstract of Surgery	Vol. XVII	1913
Jahreskurse für Ärtzliche Fortbildung	(8)	1913
Journal of Experimental Medicine, The	Vol. XVIII	1913
Journal of Medical Research, The	Vol. XXVIII	1913
Journal of Mental Science	Vol. LXIX	1913
Journal of Nervous and Mental Diseases, The	Vol. XL	1913
Journal of the American Medical Association	Vol. LXI	1913
Journal of the Royal Sanitary Institute	Vol. XXXIV	1913
Journal of Tropical Medicine, The	Vol. XVI	1913
Lancet, The	Vol. II for	1913
Medical Annual, The		1914
Medical Chronicle, The	Vol. XXV	1913
Medical Directory, Nisbet's	(2)	1912
Medical Officer, The	(3) Vols. IX, X	1913
Medical Record, The	Vol. LXXXIV	1913
Medical Review, The	Vol. XVI	1913
Medical Society's Transactions, The	Vols. XXXIV–XXXVI	1911–13
Medical Society's Transactions, General Index to Vols. I–XXXI		1911
New York Surgical Society, Transactions of the	(4) Vol. I	1912
Press Guide, Willing's		1914
Progressive Medicine	Vol. I	1914
Revue de Chirurgie	Tom. XLVIII	1913
Revue de Thérapeutique		1913
Royal Society of Medicine, Proceedings of the	Vol. VI	1913
Surgery, Gynecology and Obstetrics	Vol. XVII	1913
Therapeutic Gazette	Vol. XXXVII	1913
West London Medical Journal	Vol. XVIII	1913
Wiener klinische Wochenschrift		1913
Zeitschrift für Urologie	Bd. VII	1913

MEETINGS OF SOCIETIES.

Bristol Medico-Chirurgical Society.

March 11th, 1914.

Dr. P. WATSON-WILLIAMS, President, in the Chair.

Mr. HEY GROVES exhibited a loan collection of **Photographs, skiagraphs, and instruments,** from Germany, Austria, France, Belgium, America, and the United Kingdom, illustrating the operative treatment of fractures.

Dr. EDGEWORTH read notes of a case of **Uniformly enlarged thyroid with tachycardia, diagnosed and treated for six years as an incomplete form of exophthalmic goitre, and cured by administration of thyroid extract** (see p. 144).—Dr. J. O. SYMES asked if the patient lost weight under thyroid treatment. A possible explanation of the recovery was that it took place spontaneously and independently of the treatment. A great deal of thyroid extract, etc., on the market was inert, and therefore not harmful.—The PRESIDENT asked if there was any other evidence of pressure on the vagus, and alluded to cases of mixed hyperthyroidism and myxœdema.—Dr. EDGEWORTH replied that the patient had not a single symptom of myxædema. The pulse rate of 100 was against it. Improvement began a week after taking the thyroid extract. He did not believe a large number of cases recovered spontaneously. Only 25 per cent. of cases get well in that way, according to Mackenzie and Hale White. The thyroid gland in his case had become much smaller under the treatment.

Mr. C. F. WALTERS read a paper on **Autoplastic intra-medullary bone pegging of fractures** (see p. 139).

Mr. HEY GROVES discussed **Some modern ideas in the treatment of fractures.**—Mr. GREER (Newport) alluded to the need for rapidity in operating. He considered Lambotte's methods superior to Lane's.—Mr. SHEEN (Cardiff) pointed out that though a skiagram showed a good anatomical result, it did not reveal the suppuration nor the stiffness which might follow an operation. On the other hand, the result of treatment might appear bad in a skiagram, but the functional capacity of the limb be good. We ought to compare a series of patients who had been treated by operation with a series treated without operation.—Mr. WALTERS and Mr. GROVES replied.

April 8th, 1914.

Dr. P. WATSON-WILLIAMS, President, in the Chair.

The following cases were shown:—

Dr. MICHELL CLARKE: (*a*) **A case of goitre, with symptoms of myxœdema, which had been relieved by the administration of a thyroid extract.** — Mr. HEY GROVES advised removal of a portion of the gland to relieve pressure symptoms, and considered that the presence of myxœdema did not contra indicate this, as the gland was not functioning normally. (*b*) **A case of acute toxic polyneuritis, which simulated an acute ascending spinal palsy in its origin.** No cause for it could be ascertained, but the condition was improving. (*c*) **A case of septic rheumatic endocarditis, of fifteen months' duration, in a man aged 19.** Pyrexia and joint swellings occurred whenever the patient got up from bed. The pyrexia and rheumatism ceased after administration of normal sterile horse serum by the rectum.

Dr. J. A. NIXON: (*a*) **A case of multiple or "button" epitheliomata of the leg, which appeared subsequent to the treatment of an extensive lupus with X-rays.** The case, it was thought, suggested that the frequent administration of small doses of X-rays was the most likely method to lead to this result. (*b*) **A case of progressive atrophy of the right hand and forearm of an adult woman.** It was associated with what seemed to be a congenital malformation of both elbow-joints.— Mr. HEY GROVES suggested that the atrophy might be due to a nerve lesion, the result of a bone malformation. (*c*) **A case for diagnosis resembling Friedreich's ataxia.**

Mr. HEY GROVES: **Two patients in whom autoplastic bone grafts had been used with success.** In one case a portion of the ulna had been removed and wired on to form a splint for an ununited fracture of that bone, and in the other a peg from the tibia had been used to fix a movable knee-joint after an excision. The exhibitor insisted on the necessity of firm mechanical fixation of a graft to obtain union.

Mr. A. J. WRIGHT: **A case of necrosis of the superior maxilla and mandible in a patient with extensive laryngeal and pulmonary tuberculosis.** The condition was progressive, and had not been influenced by the administration of salvarsan, mercury, and iodides.

Dr. E. CECIL WILLIAMS read notes on a **Case of acute lymphatic leukæmia** (see p. 147).

May 13th, 1914.

Dr. P. WATSON-WILLIAMS, President, in the Chair.

The meeting was devoted to a discussion on **The results of the treatment of pulmonary and laryngeal tuberculosis by vaccines** (see p. 97).—The discussion was opened by Dr. S. H. HABERSHON, Physician to Brompton Hospital, who dealt with "The secondary infections in cases of pulmonary tuberculosis, with special reference to their vaccine treatment."—Dr. NOEL BARDSWELL, Medical Superintendent of the King Edward Sanatorium, followed, and discussed "Tuberculin treatment." — Drs. SHINGLETON SMITH, L. J. SHORT, NEWMAN NEILD and NIXON took part in the discussion.

J. LACY FIRTH,
A. J. WRIGHT, *Hon. Sec.*

Obituary.

ALEXANDER OGILVY, B.A., B.CH., M.D., F.R.C.S.I.

ALEXANDER OGILVY was born in Dublin on November 18th, 1863, and his death on June 10th, 1914, at a comparatively early age, and in the height of popularity and success, is deeply deplored by all his colleagues and numerous friends.

For the following notes on his career we are indebted to his colleague, Mr. F. Richardson Cross :—

"After studying in the Coleraine Academical Institute, Dr. Ogilvy was entered at Trinity College, Dublin. He was a football player, but he was a better waterman, and most enthusiastic in any kind of yacht or sailing boat.

"He took the degrees B.A., B.Ch. and M.D., and was a Fellow of the Royal College of Surgeons of Ireland. He showed an early leaning towards ophthalmic surgery, and soon became House Surgeon to the National Eye and Ear Hospital in Dublin, where Fitzgerald, Sir Henry Swanzy and Storey were at work.

"In 1890 he succeeded Herman-Snellen as House Surgeon to the Bristol Eye Hospital, and remained at that post nearly three years, with, as the Report says, 'a most successful tenure of office.' He was then advised to go to Germany, and worked in the Vienna Clinic under Fuchs, and at Heidelberg under Leber. He also spent some time in London as Clinical Assistant in the Moorfields Ophthalmic Hospital. But he always had a strong attachment to Bristol, where he had already made many friends. He attended the meeting of the British Medical Association in Bristol in 1894, and expressed a desire to recommence work there. He arranged with Mr. Cross to return

as his private assistant, and to help in the work of the Eye Department of the Royal Infirmary and the Eye Hospital. He studied steadily, and did a considerable amount of good pathological work with Dr. (now Colonel) Kelly, who was House Surgeon at the Eye Hospital at that time.

"In 1897 he started in practice for himself, but continued to act as Clinical Assistant in the two institutions mentioned. He then joined Mr. Prichard in the work of the Eye Dispensary in Orchard Street, and became one of the Surgeons there. His increasing experience and ability, associated with a natural geniality and charm of manner, soon brought him many clients, and when in 1900 the important post of Ophthalmic Surgeon to the Royal Infirmary became vacant Ogilvy was appointed to it, and from this time his professional success was assured. His assistance was increasingly asked for by the members of his profession, not only in Bristol, but in the neighbouring districts.

"His teaching was very popular among the students, and his special knowledge was of great value to his colleagues. No man set a higher value on the best traditions of the Royal Infirmary than he. He was true to his colleagues, kind and attentive to his patients, and generous to the poor. On Dr. Hailes resigning his post on the Eye Hospital Staff, Dr. Ogilvy was at once elected to succeed him, and thus he became once more associated with the institution which first brought him to Bristol.

"His patients and the profession both had the greatest confidence in his opinions, and in his power of diagnosis. He was a thoroughly good, all-round oculist. He was much interested in disease of the cornea and other superficial conditions. He was a very successful operator, and performed with great success such difficult manipulations as the 'simple' extraction of cataract and trephining for glaucoma, in which disease he could show an exceptionally good list of successful cases.

"He wrote many reviews and several papers for this *Journal*, and he often made valuable communications at the local branch meetings, and also to the *Transactions of the Ophthalmological Society*, among them a case of 'Epithelial Carcinoma of the Conjunctiva,' 'Tuberculous Iridocyclitis in a man of 75,' 'Ivory exostosis of Orbit,' etc., etc.

"He had many and varied activities outside his profession, and did much useful work in Bristol. He was a popular and well-known figure, and with his kindly courtesy, cheerfulness, and keen sense of humour, he made friends wherever he went, and his society was much sought after. He was an energetic member of the well-known No. 6 Battery of the old Gloucestershire Artillery, and he did much both in the ranks and afterwards as an officer to help the work of the Corps to be pleasantly

and effectually carried on. He was an excellent type of the genial, light-hearted Irish gentleman. He was a good actor, and the writer remembers an amusing incident when Dr. Ogilvy was playing 'Sir Lucius O'Trigger' in *The Rivals*, without any strain, quite naturally, and as part of himself, a critic said he had overdone the character by making it too Irish, both in speech and manner.

"As an instance of his popularity and ability he was elected a member of the Clifton Club Committee for many years, and three years at a time and for nine years in sequence he was chosen to be Chairman. He gave up a large amount of time to the interests of the Club; he was the means of several improvements in its management, and conducted its affairs with great tact and judgment He was a regular player on the Golf Links at Failand, and in May, 1913, he had the honour of being selected as Captain of the Club and Chairman of the Committee. A difficult bit of work had to be done, the raising of the annual subscription to the Club, and it was said to be entirely owing to his clever management that this was effected without opposition.

"About this time he had undergone a very serious operation for trouble that would have lowered the spirits of most men. It was faced with exceptional courage, and his self-control and hopefulness greatly helped to assist his cure. Much was expected from him, as his recovery was complete, but unhappily we have now instead to mourn the loss of a genial and reliable colleague, of a sound adviser, and of a bright and cheering companion, and to express our sincere sympathy with his wife in her sad bereavement, and with his many friends and patients."

The Rev. Canon Haigh (Vicar) conducted the funeral service, held in St. Paul's Church, Clifton, where there was a large attendance, the medical profession being particularly well represented.

Canon Haigh gave a brief and touching address, in which he said that in our hours of pain the noble and beautiful were never far away from us. At the post of duty there fell their dear brother, Dr. Alexander Ogilvy. Those who represented the profession of which he was so distinguished a member were there, owning all that he was and all that they were. English people were learning more and more to admire public men. They saw what beautiful gifts they had, and how lovingly they laid them at the feet of the public. They knew how they tended the poor. How many there were who could not be there who knew all they owed to Alexander Ogilvy. Now he had been taken from them, with his sweet manner and sympathy, his loving-heartedness and great-heartedness—a beautiful trait in anyone's character.

Local Medical Notes.

University of Bristol.—Students of the University have recently passed the under-mentioned examinations :—

UNIVERSITY OF LONDON.—*Second Examination for Medical Degrees, Part I*—R. B. Britton, D. W. Evans, G. E. Tilsley. *Part II :* C. C. Chesterman.

F.R.C.S.—*Primary Examination :* A. W. Adams, F. K. Hayman.

CONJOINT EXAMINING BOARD OF ENGLAND.—*Final Examination, Medicine :* R. I. Dacre, H. B. Logan. *Surgery :* W. E. Taylor.* *Midwifery :* G. M. Campbell.*

LICENCE IN DENTAL SURGERY, R.C.S. ENGLAND.—*Mechanical Dentistry and Dental Metallurgy :* G. M. Haydon, W. S. Hazell, R. V. Knight, W. H. B. Stride, R. H. Waters, A. E. Young. *Dental Metallurgy :* S. W. A. Davis. *Mechanical Dentistry :* L. B. James. *Final Examination, Part I :* W. A. Culverwell, E. E. Wookey, E. W. Joyner, W. J. Milton.

The Smith-Turner Scholarship in Mechanical Dentistry has been awarded to R. Waters.

ROYAL NAVAL MEDICAL SERVICE.—At the recent examination for appointments as Acting Surgeons, Dr. H. B. Parker, a former Bristol student, was placed second.

APPOINTMENTS.

G. M. Campbell, M.R.C.S., L.R.C.P., has been appointed House Surgeon to the Bristol Royal Infirmary.

C. C. Harrison, M.B., B.S. Lond., has been appointed House Surgeon to the Bristol Royal Infirmary.

E. S. Sowerby, M.B., B.S. Lond., has been appointed House Physician at the Bristol Royal Infirmary.

W. E. Taylor, M.R.C.S., L.R.C.P., has been appointed Casualty House Surgeon at the Bristol General Hospital.

R. B. Johnson, M.R.C.S., L.R.C.P., has been appointed First House Physician at the Bristol General Hospital.

B. J. L. Fayle, M.R.C.S., L.R.C.P., has been appointed House Surgeon at the Bristol General Hospital.

R. Creasey, M.R.C.S., L.R.C.P., has been appointed Second House Physician at the Bristol General Hospital.

* Denotes qualification.